A Model of Dance/Movement Therapy for Resilience-building in People Living with Chronic Pain: A Mixed Methods Grounded Theory Study

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Like the five loaves of bread and two fish of a little boy,

I dedicate this dissertation to the gracious hand of God.

May He bless this humble offering

to be broken and shared to feed amd nourish others.

I also dedicate this work to my parents

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Abstract

A Model of Dance/Movement Therapy for Resilience-building in People Living with Chronic Pain: A Mixed Methods Grounded Theory Study

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Awareness of pain as a multifaceted phenomenon is growing and more people are seeking complementary and alternative medicine or psychotherapeutic approaches for chronic pain management. Furthermore, the significance of positive health concepts focusing on individuals' strength within the context of adversity, such as resilience, has been recognized in chronic pain management. However, contemporary pain management strategies as well as existing resilience models have largely been neglecting a fundamental component of the experience of chronic pain and its rehabilitation, namely embodiment. This study aimed at examining how Dance/Movement Therapy (DMT), an embodiment and enaction-based psychotherapeutic approach, may help people living with chronic pain to foster resilience through the corporeal experience of the moving body.

To answer the question, "What theoretical model grounded in qualitative and quantitative data may explain the therapeutic factors and mechanisms of DMT for resilience building in people living with chronic pain?" an innovative multiphase Mixed Methods Grounded Theory (MM-GT) study was developed and conducted. In phase I, a substantive model was generated based on the findings from two sets of data collection and analysis processes, namely meta-modeling and reflexive GT. Based on these findings, a 10-week group DMT intervention was designed and appropriate quantitative outcome measures were determined. In phase II, the substantive model was tested quantitatively and qualitatively during the clinical intervention. The quantitative and qualitative findings were then compared and integrated to generate a clinical

model. Through integrating the models from the two phases, a refined final composite model was constructed.

The quantitative findings showed that there was statistically significant change in *resilience (p* <. 001), *kinesiophobia (p*=. 031), *attention regulation,* a subscale from *body awareness* (*p*=. 016), and *pain intensity (p*=. 03) after the 10-week intervention. The Patient's Global Impression of Change score indicated that about 70% of the participants felt moderately to a great deal better after the treatment. The immediate effect of DMT sessions on *mood*, *stress*, *relaxation*, and *pain* was also tested significant with *p* <. 001 for all outcomes. Correlation analysis confirmed that there is a statistically significant relationship between body awareness and self-efficacy (*p* <. 0001).

The final GT model shows that the DMT process involves dynamic interactions between various factors that facilitate the intricate mechanisms of DMT to foster resilience resources for chronic pain management. The overall phenomenon is a process of *breaking free* from the rigidity and imprisoned state created by the overpowering impact of chronic pain toward *regaining control* over pain and one's life. DMT provides a novel environment for creative self-exploration and interactions, and mobilizes people to loosen up at all levels – physical, cognitive, emotional, and social. Key therapeutic mechanisms include *activating self-agency*, *connecting to self*, *connecting to others*, *enhancing emotional intelligence*, and *reframing*. Several moderator factors were identified namely person factors (i.e., peer support and therapist support) and therapy factors (i.e., self-directive structure, optimal level of challenge, music, and home practice). A set of contextual conditions were also identified namely activity level, alexithymia, % of time in pain, social support, other life stressors, and engagement with the psychotherapeutic aspects of the treatment. Therapy outcomes include being in-control, integration, emotional health, plasticity,

and readiness to engage with outside world. As a result, people experienced new ways of living in their body and being in the world.

Based on the findings, several theoretical, clinical and methodological implications as well as suggestions for future research are proposed. The process and outcome of the study confirmed that MM-GT is an effective research method for generating and testing a theoretical model that can describe complex data.

CHAPTER 1: INTRODUCTION

Pain is without doubt as ancient as illness. Although pain is a vital mechanism that signals injury or illness in the body so that the affected area can get prompt attention and the care it demands, when the pain becomes chronic it loses its functional usefulness and becomes a disease itself, causing detrimental effect on an individual's quality of life and well-being (Morley, 2008; Turk & Okifuji, 2002).

According to the World Health Organization (2004), the chronic pain epidemic is one of the most underestimated health care challenges in the world, seriously affecting the quality of life of individuals who are afflicted and causing significant burden on the health care system. There are over 1.5 billion individuals affected by chronic pain globally (AAPM, n.d.). In the United States, one in four people suffer from chronic pain and one in ten people live with severe chronic pain, costing society as much as $635 billion annually, which is more than the yearly cost for diabetes, heart disease and cancer combined (Institute of Medicine Report, 2011).

1.1 Problem Statement

The traditional biomedical model has limited the focus of pain treatment to the control of sensory processing, resulting in heavy reliance on pharmacological treatments which often cause complex side effects and may result in drug addiction (McCracken, 1998). The inadequacy of traditional pain management approaches, in addition to the recognition that pain is a complex subjective experience influenced by multiple factors, became the impetus for more integrative pain management strategies (Gatchel et al., 2007). Contemporary understanding of pain views pain as "a complex perceptual experience influenced by a wide range of psychosocial factors, including emotions, social and environmental context, sociocultural background, the meaning of pain to the person, and beliefs, attitudes and expectations, as well as biological factors" (Turk & Okifuji, 2002, p. 678). This improved understanding of pain has resulted in an increased use of complementary and alternative medicine (CAM) therapies including mind and body approaches

such as acupuncture, guided imagery, massage, meditation, relaxation therapy, spinal manipulation, tai chi, and yoga for chronic pain management (Haugli, Steen, Lærum, Nygard, & Finset, 2001).

Despite the widespread use of CAM therapies, the National Center for Complementary and Integrative Health (NCCIH) reported that there is a lack of scientific evidence that explains whether these therapies help the conditions for which they are used and, if so, how (NCCIH, 2011). NCCIH thus demands research on both effectiveness and mechanisms of chronic pain treatment approaches that may help individuals with chronic pain minimize pain, maximize function, and improve quality of life. However, despite the subjective nature of the pain experience, the majority of complementary and integrative therapies research has focused on quantitative outcome measures only. There has been a lack of studies that facilitate in-depth understanding of the meaning and complexity of the lived experience of having chronic pain (Hsu et al., 2010). Therefore, research focused on increasing understanding of both process (mechanism) and outcome (effect) of a pain management approach through robust research methodology such as mixed methods research is much needed.

1.2 Purpose Statement

This study aimed to answer this call by utilizing an intricate and innovative mixed methods research design to develop and test a composite model of dance/movement therapy (DMT) for resilience in chronic pain patients. The model will be developed from diverse forms of data that are grounded in the lived experience of patients with chronic pain.

The core outcome of this study, resilience, is one of the most heuristic and integrative concepts that has emerged in the field of social science as a result of an important shift in treatment focus from pathology to positive health concepts (Zautra & Reich, 2011). Fundamentally, resilience refers to positive adaptation or the ability in the context of distress or adversity to maintain or regain psychological well-being and physiological homeostasis despite

the adverse condition (Herrman et al., 2011). When pain is chronic and the cure is beyond medicine, it enters the realm of suffering and results in an existential crisis; thus the focus of treatment moves from curing to healing (Egnew, 2009). Because resilience takes a different trajectory than recovery (Bonanno, 2004), the "health-despite-adversity" notion of resilience fits well with the treatment of patients with chronic pain. Empirical evidence has shown how resilience is a key factor in chronic pain sufferers' adaptation and coping responses (e.g., Ong, Reid, & Zautra, 2010). In addition, it is recommended that to fully understand resilience in adults, a mind-body approach that incorporates both physical and mental health, and the interactions between the two should be used (Zautra, Hall, & Reich, 2010).

Amongst various CAM therapies, dance/movement therapy (DMT) distinguishes itself for its unique therapeutic mechanisms. By definition, DMT is "the psychotherapeutic use of movement to further the emotional, cognitive, physical and social integration of the individual" (American Dance Therapy Association (ADTA), 2009). DMT has some similarity with other mind-body based disciplines such as yoga or meditation in that it utilizes the individual's knowledge of the body and movement as a means to improving health and psychological well-being. Yet unlike the other disciplines in which the movement is either prescribed or directed by the interventionist, DMT is based on creative and symbolic movement expressions that are self-directed. The therapist's role is to help the individual integrate this experience through psychotherapeutic skills and counseling (Cruz, 2001), thereby aiming to activate an individual's internal locus of control and strength to cope with challenges and adversity. At the same time, the fact that DMT uses symbolic, nonverbal language of the body rather than verbal language sets it apart from other types of psychotherapy. This allows DMT to be an effective psychotherapeutic approach for chronic pain sufferers who often experience *alexithymia*, a problem in which one has difficulty thinking and talking about their emotions and processing feelings verbally (Bojner Horwitz et al., 2006).

The appropriateness and potential benefits of DMT for chronic pain can be ascribed to the promotion of mind/body integration and healthier body image, emotional expression, facilitation of positive emotions, stress reduction and relaxation, development of coping strategies, meaning making through symbolic expression and interpretation, improvement of communication skills and enhancement of interpersonal relationships (Bullington et al., 2003; Goodill, 2005), yet little research has been done on DMT for pain (Bullington, 2009; Horwitz, Kowalski, & Anderberg, 2010). A few studies on DMT for pain have reported positive effects of DMT on pain intensity, body image, stress and mood. However, the therapeutic process and mechanisms that explain the effects of DMT are unknown. Therefore, research that examines how DMT might address the complexity of the chronic pain experience and provide a comprehensive theoretical framework or model to support the use of DMT for enhancing resilience in people coping with chronic pain is needed at this time. I propose that an embodiment-based intervention such as DMT might play a unique role in enhancing resilience in people with chronic pain.

1.3 Method Statement

An innovative mixed methods design, namely a sequential exploratory-confirmatory mixed methods grounded theory (MM-GT), was used to answer the study's research question "What clinical model grounded in quantitative and qualitative data can explain the therapeutic mechanisms of dance/movement therapy in building resilience of chronic pain patients?" This study design was comprised of three phases that use quantitative and qualitative research methods. The three phases were 1) exploratory phase: model generation; 2) confirmatory phase: DMT model testing and refinement; and 3) model completion phase. During the first phase, an initial grounded theory was developed from two qualitative data collection and analysis processes, namely (a) building a formative DMT model of resilience based on existing literature using meta-modeling strategy; and (b) conducting a constructivist grounded theory about the

experience of chronic pain and resilience from patients' interviews. A substantive theoretical model was developed as results of the first phase. In the second phase, a 10-week DMT intervention was conducted during which the therapeutic mechanisms of DMT for resilience building, as identified in phase I, were investigated quantitatively (using several standardized instruments and statistical analysis of the numerical data), and qualitatively (by collecting and analyzing various data sources including participants' journals, scripts from the post-treatment interview data, and theoretical memos). The results from each strand were then compared and integrated. Grounded on the results from the second phase, the initial model from the phase I was revised and refined in Phase III and the final composite model of DMT for resilience of chronic pain patients was constructed.

CHAPTER 2: REVIEW OF THE LITERATURE

2.1 Chronic Pain

2.1.1 Definition and Epidemiology

2.1.1.1 Defining pain. The etymological root of “pain” in Latin is “poena”, which means “penalty” or “punishment” (Scarry, 1985). Although there exist many different ways of defining pain depending on the emphasis on particular aspects of the pain phenomenon (Flor & Turk, 2011; Korula, 2008), the most widely used definition of pain is provided by International Association for the Study of Pain (IASP): “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Merskey 2007, p.13). This definition demonstrates the significance of the emotional component of the pain experience and indicates that pain is not exclusively defined in terms of sensory input but rather is a psychological state (Feuerstein, 1994). The fact that pain can appear in the absence of tissue damage or one may not experience pain in the presence of significant tissue damage denotes how important a role psychological factors play in an individual’s perception of pain. The IASP further specifies that “pain is always subjective” (as cited in Flor & Turk, 2011, p. 10). Subjectivity is a quintessential aspect of the pain experience, and experts agree with the definition provided by McCaffery (1968), namely that "pain is what the person says it is and exists whenever he or she says it does" (as cited in Ferrell, 2005, p. 88). This idea has revolutionized the field of pain management (Korula, 2008).

The definition by the IASP reflects a significant advance in conceptualization of pain compared to the traditional biomedical view in which pain was perceived purely in the domain of sensory physiology or as secondary symptom to actual physical pathology (Flor & Turk, 2011). However, scholars have indicated the limitation of this definition as pain is now understood as a complex phenomenon with multiple dimensions (Flor & Turk, 2011; S. Morley, 2008; Turk & Okifuji, 2002). A more contemporary definition of pain describes it as “a complex perceptual

experience influenced by a wide range of psychosocial factors, including emotions, social and environmental contexts, sociocultural background, the meaning of pain to the person, beliefs, attitudes and expectations, as well as biological factors" (Turk & Okifuji, 2002, p. 678).

2.1.1.2 Acute versus chronic pain. It is important to differentiate between acute and chronic pain (Flor & Turk, 2011). This differentiation is certainly not without disagreements amongst pain experts (Shipton, 1999). Acute pain begins suddenly as a warning of injury or disease of the body and remains until the underlying damage or pathology has healed. However, some painful conditions persist for weeks, months, or years even after the initial trauma is healed. Whereas persistent, long-term pain might have an ongoing cause such as rheumatoid arthritis, peripheral neuropathy, cancer or idiopathic pain (Vrancken, 1989), in many cases pain persists without identifiable reason. Traditionally, the most commonly used timeframes to distinguish acute from chronic pain are 3 months and 6 months (Korula, 2008). Flor and Turk (2011) suggest that in addition to the time dimension, presence or extent of physical pathology that may be causing pain should be considered in conceptualizing chronicity of pain as well. Thus, an alternative definition of chronic pain is, "Pain that extends beyond the expected period of healing" (Turk & Okifuji, 2001, p. 17).

Chronic pain is typically classified as pain associated with cancer or "malignant pain" and non-cancer related pain or "benign pain". Yet, since there is no pain that is benign for one who is suffering, and pain can overtime become a malignant process itself, some scholars avoid using this term for distinction (Flor & Turk, 2011).

In addition, pain can be also classified in terms of mechanism. *Nociceptive pain* arises from an injury in which the sensory endings of nociceptive nerve fibers are activated by noxious stimuli and the brain interprets input as being painful (Shipton, 1999). In nociceptive pain, the degree of pain is usually proportional to the degree of injury (Goodwin & Bajwa, 2004). *Neuropathic pain* is pain caused by some malfunctioning in the nervous system. Neuropathic pain arises when there is a problem in the sensory processing of the nervous system or when normal

sensitizing mechanisms in acute pain persists pathologically (Goodwin & Bajwa, 2004). In this type of pain, there is no proportional relationship between the degree of pain and the degree of injury. Finally, *psychogenic pain* refers to pain that is "inconsistent with the extent of tissue injury or co-existing neurological disease" (Shipton, 1999, p. 14), and is associated with psychological factors or psychiatric illness.

2.1.1.3 Pain Epidemiology. According to World Health Organization (2004), the chronic pain epidemic is one of the most underestimated health care challenges in the world, seriously affecting the quality of life of individuals with chronic pain and causing significant burden on the health care system. Recent research reports indicate that about 1.5 billion people worldwide have a chronic pain condition (Global Industry Analysis, 2011). In the United States, more than 116 million people suffer from chronic pain each year, costing society as much as $635 billion annually due to medical charges and lost productivity (Institute of Medicine Report, 2011). The statistics furthermore indicate that there are more Americans suffering from chronic pain than diabetes, heart disease and cancer combined (AAPM, n.d.). Gatchel et al. (2007) stated that adults over 50 years are twice more likely to be diagnosed with chronic pain when compared to people who are younger. It is estimated that by the year 2030, the proportion of the American population aged 65 or older will increase by 57% (Social Security Administration, n.d.). These data and the extended human life expectancy raise a momentous concern for chronic pain as a significant national health care problem (Gatchel, Peng, Peters, Fuchs, & Turk, 2007).

2.1.2 Common Theories and Models of Pain

Several theories and models of pain exist. In this section, a brief overview of the most common ones will be presented.

2.1.2.1 Biomedical model of pain. The traditional biomedical model of pain, which has been central to the medical thinking since Descartes in the 17th century, dates back as far as the ancient Greeks (Turk & Monarch, 2002). According to this unidimensional model, "patients'

reports of pain should be directly and proportionally related to the extent of physical pathology"(Flor & Turk, 2011, p. 6). This model postulates that there are specialized nerve endings involved in the transduction and transmission of painful information, and through unique pathways the painful information travels from the periphery to the spinal cord and then to the brain (Gatchel et al., 2007). It follows that the recommended treatment for pain involves either surgically removing the source of the pain or cutting or blocking the pain pathways by pharmacological or surgical means (Flor & Turk, 2011).

Although the biomedical approach has been responsible for eliminating or reducing the prevalence of pain related to many diseases over the last century (Checkland et al., 2008), the model has been criticized because of its limitation in not addressing the role of psychological factors in health and illness and their interaction with pathophysiological factors (Turk & Okifuji, 2002). This criticism is mainly based on observations that contradict the model such as cases in which people reporting significant level of pain while there is no physical pathology objectively verifiable, or cases in which people who report no pain display significant pathology in imaging tests (Flor & Turk, 2011). Recognizing the inadequacy of the biomedical pain models and the treatments based on these unidimensional approaches became the impetus for a more intricate and integrative model of pain management (Gatchel, Peng, Peters, Fuchs, & Turk, 2007).

2.1.2.2 Gate control theory of pain. In 1965, Melzack and Wall proposed Gate control theory as an attempt to develop an integrative model of chronic pain that can overcome the shortcomings of traditional unidimensional models. The theory proposes that "neural mechanisms in the dorsal horns of the spinal cord act like a gate that can increase or decrease the flow of nerve impulses from peripheral fibers to the spinal cord cells which project to the brain" (Melzack, 1986, p. 2). They assumed that "large diameter Aβ fibers have an inhibitory effect on this spinal gate that antagonizes the excitatory effect of incoming nociceptive Aδ- and C-fiber input, closing the hypothetical gate" (Flor & Turk, 2011, p.35). They proposed that there is a central monitoring

system that controls the spinal output, and pain sensation is perceived only when the sensation passes through the opened gate. The "gate" in the spinal cord operates by differentiating between the types of fibers carrying pain signals, so pain signals traveling via small nerve fibers (Aδ- and C) are allowed to pass through, while signals sent by large nerve fibers (Aβ fibers) are blocked. This theory is suggesting that the gate is strongly influenced by descending controls from the brain as a result of cognitive processes and then can block the ascending impulses and significantly diminish the amount of pain a person experiences (Melzack, 1996). The gate control model is important because it proposed that psychological and behavioral factors might have several routes of action in diminishing or enhancing pain perception (Flor & Turk, 2011) as well as being the first comprehensive model of pain perception that incorporated sensory, affective as well as cognitive components. The model suggests that factors such as attention, emotion, and memories of prior experience may exert control over the perception of pain (Melzack, 1982); and by increasing sensory, non-painful input, especially in the auditory, visual and tactile domains, the pain perception can be greatly modified (Whipple & Glynn, 1992).

2.1.2.3 Neuromatrix theory of pain. In 1999, Melzack proposed a revised model of pain perception called *the neuromatrix theory of pain*. According to this theory, “pain is a multidimensional experience . . . . produced by characteristic ‘neurosignatures’ or patterns of nerve impulses generated by a widely distributed neural network: the ‘body-self-neuromatrix” (Melzack, 1999, p. 121). In Melzack’s model, the term *body-self* refers to a neural network that consists of loops between the thalamus and cortex as well between cortex and limbic system, and *neuromatrix* is “the entire network, whose spatial distribution and synaptic links are initially determined genetically and are later sculpted by sensory inputs” (Melzack, 2001, p.1379). Any inputs (especially repeated sensory inputs) from the body undergo cyclical processing and synthesis and creates characteristic pattern in the neuromatrix: the neurosignature. This theory proposes that the neurosignature pattern is modulated not only by genetic factors but also by sensory inputs as well as cognitive events, such as psychosocial or emotional stress. Also, a

trigger by physical or psychological stressor on stress-regulation system may cause lesions of specific parts of injury or pain thus affecting neurosignature patterns that aggravates chronic pain (Melzack, 2001).

2.1.2.4 Biopsychosocial model of pain. The biopsychosocial model, which is a prominent scientific model, is considered fundamental in contemporary understanding of human health in general, and pain in particular (Ahlberg et al., 2002). In contrast to the traditional biomedical model, the biopsychosocial model focuses not only on disease but also on illness, a subjective experience or a self-attribution a person has about the disease (Gatchel et al., 2007). Because an illness is the complex interaction of biological, psychological, and social factors (Gatchel, 2005), biopsychosocial model views that an illness may arise from any one of or a combination of organic disease, functional disorder, psychological disorder, somatization, stress in social relationship, the individual's interpretation of symptoms, and peer or family reactions to the disease (Hyams & Hyman, 1998). Thus pain is understood as a "subjective perception that results from the transduction, transmission, and modulation of sensory information, which may be filtered through an individual's genetic composition, prior learning history, current psychological status, and sociocultural influences" (Gatchel et al., 2007, p. 582).

Taking this point of view, Loeser (1982) formulated a model that explains the concept of pain with four dimensions: *nociception*, *pain*, *suffering*, and *pain behavior*. *Nociception* involves the processing of noxious stimuli that are conveying information about potentially tissue damage. *Pain*, on the other hand is the subjective perception that is based on "the transduction, transmission, and modulation of sensory information [which is] filtered through an individual's genetic composition, prior learning history, current psychological status, and sociocultural influences" (Gatchel et al., 2007, p.582). *Suffering* refers to the emotional response to the nociception or pain and includes "myriad of features associated with the person's perception of the meaning and the impact of pain on his or her life" (Flor and Turk, 2010, p. 17). Pain behavior means overt and/or non-conscious communications of pain and suffering that is, what

people say or do about pain (e.g. fear-avoidance behavior). Loeser also stated "all sensory phenomena including nociception, can be altered by conscious or unconscious mental processes" (as cited in Morris, 1998, p. 118). Morris (1998) continues that,

> The mind's power to alter nociception makes pain far more complex than a one-message Cartesian alarm bell, and awareness of this complex power creates an understanding so remote from standard biomedical lore that it might be said to open up a whole new world of postmodern pain. (p.118)

The conceptualization of the biopsychosocial model can be applied in clinical settings to identify factors from across biological, psychological and social domains that affect the pain perception. Moreover this understanding suggests utilizing interventions which can address those factors. Ample evidence from clinical trials supports that clinical approaches based on biopsychosocial model can be effective in treating patients suffering from complex and chronic pain (Hsu, BlueSpruce, Sherman, & Cherkin, 2010; Hyams & Hyman, 1998; Nicholas Penney, 2010).

2.1.3 Pain as a Multidimensional Human Experience

2.1.3.1 Bodily aspects of pain.

The body in pain: The dys-appearing body. According to the French phenomenologist Maurice Merleau-Ponty, our body is the existential ground of human experience (Csordas, 1994). Merleau-Ponty's notion of the *lived body, le corps propres* in French, literally means my *own* body, and is a holistic conception contrary to the dualistic way of understanding mind and body (Bullington, 2009). It corresponds to the conception that I "am" my body rather than I "have" a body, and that mind-body unity is in constant relation to the meaningful human world (Bullington, 2009). The lived body thus means the unity of mind-body-world, and according to this notion, "the field where these three poles meet and interact is the realm of human experience" (Bullington, 2009, p. 102).

When the body is healthy and functioning normally, we are one with our bodies. Our bodies disappear from awareness and "fall back into unexperienceable depth"(Leder, 1990, p.

53). Leder (1990) provides a lucid extended explanation of this self-concealing/ self-effacing phenomenon of the lived body:

> Whilst in one sense the body is the most abiding and inescapable presence in our lives, it is also characterized by absence. That is one's own body is rarely the thematic object of experience . . . . the body, as a ground of experience. . . . tends to recede from direct experience. (Leder, 1990, p. 1)

But when there is disruption in our body such as pain, suddenly the body or a certain part of the body becomes a central focus of experience. The body is no longer a null point, but an active presence. I no longer "am" my body but now I "have" a body, a perceived object in the world. The natural modes of 'disappearance' are therefore replaced by a dysfunctional sense of bodily 'dysappearance' and corporeal 'betrayal' (Leder, 1990). According to Bullington (2009),

> Chronic pain forces one to become aware of the body as something arduous . . . . standing in the way of one's dealing with the world. . . . Having to constantly pay attention to aches and pains brings about a new articulation of the world, flattens the world pole of the lived body, and disrupts the harmony of the mind-body-world unity. (p. 105)

Thus when someone suffers from chronic pain, it is not only the body that is disrupted by pain, but also the way the body can live the world.

Disembodiment. When people experience long-lasting pain and the pain becomes unbearable, they tend to develop a tendency to distance or detach themselves from their own body as a strategy to protect themselves from the overwhelming physical pain (Morse & Mitcham, 1998; Osborn & Smith, 2006). Good (1994) introduces a patient's experience of body in pain,

> I am outside myself, this whole thing I've got to deal with is ah, a decayed mass of tissue that's just not any good, and I, I'm almost looking at it that way again: as if my mind were separated . . . . from my self, I guess. I don't feel integrated. I don't feel like a whole person. (p. 125)

This "distinct physical distancing from one's own body" is called *disembodiment* (Morse & Mitcham, 1998, p. 671). *Embodiment* is another term constituted by Merleau-Ponty, who describes it as the bodily aspects of human subjectivity (Morse & Mitcham, 1998) and a "mode of presence and engagement in the world" (Csordas, 1994, p. 12). Bullington (2009) compares the tacit nature of embodiment to the case of using native language; "I go *through* my body, just as

the native speaker passes through language to the meaning of words. When they work properly, language and bodies are not thematically present" (p. 102). But pain comes in-between this unity and splits one's body and the self. Since the body is "the unique instrument through which I experience my insertion in the world" (Natanson, 1970, as cited in Yung, 1997. P. 7), the problem of disembodiment may cause not only the disintegration of one's body but of the whole self (Charmaz, 1995). Vrancken (1989) states how pain produces,

> . . . . alienation, an existential vacuum; being cut off from the outer world, thrown back upon the body in itself, is isolation, disintegration, pain. . . . Immediately dichotomy is brought about . . . . For the sake of the integrity of our personality we make an 'it' of the body and an abstraction of pain . . . . Pain makes us believe that we can cut ourselves off from the body. Through rationalizing pain. . . . 'I' and my body become two separate entities. Thus pain can be depicted as the experience of psychophysical dualism. (p. 442)

Furthermore because the issue of embodiment is not only about the body as subjective source but also as intersubjective ground of experience (Csordas, 1999), disembodiment may affect on individual's interpersonal relationship, causing the disengagement between the self and others as well (Scarry, 1985).

Objectification. By disembodying, persons with pain attempt to remove the body part as well as feelings about themselves and their illness. By doing so, they dissect the pain and make firm separation between their impaired bodies and self-concepts when the pain is overpowering (Charmaz, 1995). The body that is detached from the self then becomes an object. Consequently, the patients tend to regard their body as "it", albeit an alien, rather than self (Osborn & Smith, 2006).

In health, "the self is the "author" of its activities . . . . We act in the world through our bodies; our bodies are the subject of our actions, that through which we experience, comprehend and act upon the world" (Good, 1994, p. 124). But when in pain, pain takes over the body and "the pain has agency. It is a demon, a monster . . . . Pain is an 'it'" (Good, 1992, p. 39). Consequently the body becomes an object distinct from or against the acting self, or even an enemy (Good, 1994). Scarry (1985) describes that the self as the essential center of one's

experience and as one's embodied bridge to the world is split by pain.

Unfortunately the problem of dualism and objectification is further reinforced when patients interact with doctors who themselves are wedded to a Cartesian view of pain that splits mind from body- a view implicit in the mechanical biomedical model (William & Bendelow, 1998). The medical *gaze* reconstitutes person as a case, patient, or body (Good & Good, 1993). The patient's body is "touched, lifted, probed, turned, bent, tapped, disarranged and recomposed by the physician" in the course of medical examination and treatment (Yung, 1997, p. 40). The boundaries are peeled away and the symbolic and social meaning of body is negotiated and reframed; the body is disarticulated into parts and object of investigation rather than a whole. The consequence of the objectification through medical gaze is the "dispirited, unpersoned, or dehumanized body" (Yung, 1997, p. 40). As a response to the medical gaze, patients may dislodge the self from the body so the body can be handled as an object, for example calling it "the leg" or "it" instead of "my leg" (Good, 1992). They go through a transformation to protect the social and symbolic self and preserve the ontological continuity. This systematic process of objectification may cause ongoing estrangement and fragmentation of self (Yung, 1997).

Body image in pain. Body image is "how an individual perceives the physical appearance of his or her own body" (Lotze & Moseley, 2007, p. 488). Body image is the multifaceted psychological experience of embodiment, which has profound influence on quality of human life including our emotions, thoughts, behavior and relationship (Cash & Pruzinsky, 2002). People with chronic pain tend to evaluate their body appearance more negatively than do healthy individuals (Kurtz & Hirt, 1970), and often experience the distortion of body image (Lotze & Mosley, 2007). Patients report experiencing distortions of the size or shape of the affected body parts, or difficulty with locating the body parts (Lewis, MacCabe, & Blake, 2005).

2.1.3.2 Emotional aspects of pain.

Pain as emotion. Pain is primarily experienced as present in the body and it has been traditionally considered as a predominantly biological event (Turk & Okifuji, 2002). However,

pain is never solely a bodily phenomenon (Good, 1992). Pain is simultaneously bodily experience and mental-emotional experience as it is impossible to separate the notion of aversiveness from the construct of pain (Jackson, 1994), also due to its frequent association with comorbid psychiatric issues or emotional suffering (Chiesa & Serretti, 2011). Many agree that a sensory experience would not be pain if there were no perception of emotional distress. Pain, therefore, should be considered an emotional experience (Craig, 1995). According to Craig (1999), "emotional distress serves not only as a component of pain, but it may also be an issue because of its presence in anticipation of pain, as a consequence of pain, a cause of pain or represent a concurrent problem with independent sources" (p.335).

Anxiety, depression, and anger. Although there are several affective factors (mainly negative emotions) associated with pain, the three emotions that are most frequently associated with chronic pain are anxiety, fear, depression, and anger (Flor & Turk, 2011; Tunks, Crook, & Weir, 2008).

Anxiety and fear. Patients suffering from chronic pain often feel worried and anxious. Anxiety is intensified when they cannot find a cause for the pain or when the uncertainty about their prognosis or fear of future disability hits them (Gatchel et al., 2007). People with chronic pain also worry about receiving verification of their pain from others. For example, some patients whose chronic pain condition is caused by work-related injury experience extreme levels of anxiety. This anxiety is often caused by worries that in order to receive compensation for their injury and treatment, they have to "prove" that their pain is "real", which often involves going through a legal process and potentially experiencing insults to their dignity (Olender, 1962).

Fear of anticipated pain related to physical activities often causes avoidance behavior, which leads to inactivity resulting in greater disability (Gatchel et al., 2007). Results from several studies that have shown that "fear of movement and fear of (re)injury are better predictors of functional limitation than biological parameters or even pain severity and duration" (Crombez, Vlaeyen, & Heuts, 1999; Turk, Robinson, & Burwinkle, 2004; Vlaeyen, Kole-Snijders, Rotteveel,

et al., 1995, as cited in, Gatchel, 2007, p. 599). Fear also has a direct impact on physical symptoms by increasing muscle tension and physiological arousal.

Anxiety, fear, and fear-avoidance behavior are all related and together play an important role in the pain experience. It is important that effective chronic pain treatment addresses these factors (Gatchel, 2007).

Depression. Depressive symptoms are frequently encountered in individuals with chronic pain; on the other hand, depressed patients often complain about various types of pain (King, 1997). The prevalence and mortality of depression in chronic patients is high. It is reported that 50% of chronic pain patients develop major depression within five years from its onset, and the suicidal rate among patients with prolonged pain and depression has been reported to be as high as 10 to 15% (Kulich & Andrew, 2006). Research findings suggest that there is a complex relationship between pain and depression and this relationship has been under constant debate in terms of causality (Main & Spanswick, 2000). Depression not only intensifies pain (Craig, 1999), but also is a significant predictor of pain (Affleck et al, 1991; Doan & Wadden, 1989; Magni et al, 1998). Studies have shown that even though chronic pain and depression are separate phenomena and independent processes, the two share several characteristics and there is a possibility for mutual influence between them (Beutler et al., 1986; Brown, 1990; Crisson & Keefe, 1988). At this time, the mechanism underlying the relationship between chronic pain and depression is not well understood (Giesecke et al., 2005).

Anger. The unbearable pain itself may cause extreme anger and frustration in chronic pain patients. Even though the causal relationship between anger and pain is unknown, clinical evidence has shown that anger is significantly associated with pain intensity (Gaskin et al., 1992), perceived interference and frequency of pain behaviors (Kerns et al., 1994), the affective component of pain (Fernandez & Milbourn, 1994) and emotional distress in chronic pain patients (Duckro, Chibnall, & Tomizic, 1995), as well as their families (Schwartz et al, 1991). Okifuji and colleagues' (1999) study found that chronic pain patients' anger and frustration related to

persistence of symptoms, unknown etiology, repeated treatment failures as well as anger toward employers, insurers, healthcare providers, family and themselves contribute to a general dysphoric mood. An interesting finding is that approximately 70% of the sample reported that the target of their anger is themselves. The reason for this self-directed anger was their inability to alleviate their symptoms and to move on with their lives. This finding raises a significant concern when one considers the following two phenomena: a) internalization of the angry feelings is strongly related to measures of pain intensity, perceived interference and frequency of pain behaviors (Kerns et al., 1994), and b) the tendency of individuals with pain to inhibit the expression of anger is related to pain severity and overt pain behaviors (Hatch et al., 1991).

Pain versus suffering. Long lasting pain that has lost its functional meaning accompanied by emotional and social distress takes the pain to a different realm of suffering (Loeser, 1982). Suffering is angst of an order different from pain as it includes "the emotional responses that are triggered by nociception or some other aversive event associated with it, such as fear or depression" (Gatchel et al., 2007, p.582). When people's pain enters the realm of suffering, the concept of remedy becomes not cure or fix but *healing*. Egnew (2009) states that when an individual is suffering from chronic illness of a type that is beyond medicine, the suffering has to be transcended through holistic healing, and healing may occur regardless of cure, restoration of health, continued illness or impairment.

2.1.3.3 Cognitive aspects of pain. Cognition (i.e. thoughts, beliefs and appraisals) is another important psychological factor that influences the experience of pain. According to Flor and Turk (2011), "patients' attitudes, beliefs, and expectancies about their plight, themselves, their coping resources, and the health care system affect their reports of pain, activity, disability, and response to treatment" (p.71). Common pain beliefs which cause maladaptive effect in pain coping are identified as believing that "Pain is a signal of damage, activity should be avoided when one has pain, pain leads to disability, pain is uncontrollable, and pain is a permanent condition" (Jensen, Turner, Romano, & Lawler, 1994; Turner et al., 2000, as cited by Gatchell et

al., 2007, p. 602). These beliefs about pain and the meaning an individual ascribes to pain can significantly affect his or her mood and behavioral responses to pain, leading to maladaptive coping, increased suffering and greater disability.

***Catastrophizing*.** The construct of pain catastrophizing which is defined as "the tendency to focus on and exaggerate the threat value of painful stimuli and negatively evaluate one's ability to deal with pain" (Keefe, Rumble, Scipio, Giordano, & Perri, 2004) is recognized as one of the most significant contributors to the experience of pain. Picavet et al. (2002) describes the mechanism of pain catastrophizing as follows:

> Persons, who catastrophically misinterpret pain, are likely to become fearful of pain, which results in at least two processes. First, pain-related fear is associated with avoidance behaviors and the avoidance of movement and . . . . rewarding activities such as work, leisure, and family. Second, pain related fear is associated with increased bodily awareness and pain hypervigilance [which is] known to be associated with increased pain levels and hence might exacerbate the painful experience. (p. 1028)

Clinical studies suggest that an excessively negative orientation toward pain (pain catastrophizing) coupled with fear of movement or re-injury is closely related to the etiology of chronic pain and associated disability (Fritz, George, & Delitto, 2001; Picavet, Vlaeyen & Schouten, 2002; Vlaeyen & Linton, 2000). A study by Sorbi and colleagues (2006) reported that catastrophizing was the strongest pain predictor (as cited in Flor & Turk, 2011). Several other studies identified that a significant percentage of the variance in pain and disability were accounted for by catastrophizing along with other cognitive factors such as helplessness, adaptive coping, and resourcefulness (Flor & Turk, 1988; Flor, Behle, & Birbaumer, 1993). Flor and Turk (2011) concluded that "what appears to distinguish low from high pain tolerant individuals is their cognitive processing, catastrophizing thoughts and feelings that precede, accompany, and follow aversive stimulation" (p. 77).

Perceived control and self-efficacy. Perceived control refers to "the belief that one can exert influence on the duration, frequency, intensity or unpleasantness of pain" (Gatchell et al.,

2007, p.603). Prolonged experience of pain often causes learned helplessness in patients due to their disability and dependency on medication or other people (Weisenberg, 1999). Some laboratory-based studies have shown that when people have some degree of control over pain stimulation, it reduces their stress and increases pain tolerance (Weisenberg, 1984, 1989, as cited in Weisenberg, 1999). When one's perceived control over their pain is strong, he or she is able to modify the meaning of the pain stimulus which may directly affect threat appraisal, consequently decreasing the intensity and unpleasantness of pain and increase pain tolerance (Bandura et al., 1987). A study has shown that internal locus of control is associated with better coping with pain while an external orientation (i.e., chance or luck) to control of pain was associated with maladaptive coping (Crisson & Keefe, 1998).

A related concept to the perceived control is *self-efficacy*, which refers to personal judgment of how well a person believes they can perform specific behaviors in particular situations (Bandura, 1977). The significance of self-efficacy to one's ability to manage chronic pain conditions has been demonstrated (Jensen, Turner, & Romano, 1991; Kate R. Lorig, Peter D. Mazonson, & Halsted R. Holman, 1993). Studies on chronic pain have reported that self-efficacy is associated negatively with pain intensity, disability and depressive symptoms, and positively with use of pain coping strategies and better outcomes for managing pain (Arnstein, Caudillb, Mandlea, Norrisa, & Beasley, 1999; Bandura, O'Leary, Taylor, Gauthier, & Gossard, 1987; Borsbo, Peolsson, & Gerdle, 2008).

Coping vs. Acceptance. The individual's specific ways of dealing with pain, adjusting to pain, and reducing the pain and distress caused by pain, are known as coping strategies. Coping is spontaneous and intentional, and it includes overt strategies (i.e., resting, medication) and covert strategies (i.e., distracting oneself from pain, seeking information, and problem solving) (Turk & Monarch, 2002).

In chronic pain management, coping takes two forms - active coping and acceptance (Esteve, Ramírez-Maestre, & López-Martínez, 2007; Goldman, 2010; McCracken & Eccleston,

2003). Active coping refers to directed actions by an individual in pain to control their own pain and to function in spite of any pain that they are experiencing (Esteve et al., 2007). Active coping has been associated with physical activity levels (Snow-Turek, Norris, & Tan, 1996), higher levels of social interaction (Strahl, Kleinknecht, & Dinnel, 2000), and lower levels of depression (Esteve et al., 2007). However, some experts have argued that, while coping with chronic pain experience was understood as to conquer, master, or triumph over adversity, the attempt to control something that is fundamentally uncontrollable which indeed means analgesia, may be considered as a form of avoidance (McCracken & Eccleston, 2003). From this view, the concept of acceptance has been proposed as an effective adaptation effort to chronic pain. Acceptance of chronic pain has been defined as "living with pain without reaction, disapproval, or attempts to reduce or avoid it" (McCracken & Eccleston, 2003). A number of studies suggest that among the many psychological factors, acceptance of pain is one of the most powerful predictors of adaptive coping for patients with chronic pain (McCracken, 1999; Borsbo, Gerdle, & Peolsson, 2010). Greater acceptance of chronic pain is associated with less pain, depression, pain-related anxiety and behavioral problems (Bach and Hayes, 2002; Jacobson et al., 2000; Kabat-Zinn et al., 1985; Linehan, 1993; McCracken & Eccleston, 2003). Recently another term "approach" coping is proposed. Approach coping refers to "the person's cognitive and behavioral orientation to chronic pain" (Sturgeon & Zautra, 2010, p. 108) which stands in contrast to both efforts to directly solve the problem or avoidance behavior.

2.1.3.4 Socio-cultural aspects of pain.

Pain and language: inexpressibility and invisibility. One of the central characteristics of pain is its ineffability and inexpressibility (Good, 1994). Pain sufferers often say that they have trouble communicating about their pain, especially severe pain (Jackson, 1994). Scarry (1985) states that "pain not only resists the language but actively destroys it" (p. 4), and is reduced to a pre-symbolic form of cries or groans. Jackson (1994) explains that pain resists language because of the notion that language belongs to the mind, not the body. In contrast, "pain is of the body and

thus is seen as pre-linguistic such other sensations as odors, music, or inner states such as hunger or sexual arousal. What distinguishes severe chronic pain is its extreme aversive quality and persistency despite efforts to end it" (Jackson, 1994, p. 213).

Another reason why pain resists language is due to its invisibility (Good, 1994). Because pain is inherently internal, invisible, and un-sharable, it makes it a radically private event and it silences the person who is suffering (Scarry, 1985). Scarry continues that the fact that pain is so "certain" and "real" for one who has it but causes doubt for one who hears it, creates an absolute split between the reality of the one who is experiencing the pain and the other who is not. In addition, persons with pain are silenced in the medical community as the voice of the patient about their own bodily experience is often regarded as less reliable than the diagnostic technology and are thus being bypassed by their physicians (Good, 1994). As a result, the issues related to inexpressibility and un-sharability of pain inevitably create a socio-political complication and power problem (Scarry, 1985). The problem of mutating patients with chronic pain further intensifies their emotional need to express their pain, which causes greater psychological distress and suffering (Jackson, 1994).

Stigma. The fact that etymology of pain is "penalty" or "punishment" shifts the perception of pain from a purely bodily problem to a social matter (Scarry, 1985). Stigma is by definition "a blemish on one's record or reputation" (Avery, n. d.), and people with chronic pain suffer from a pervasive and devastating impact of stigma in their daily lives (Werner, Isaksen, & Malterud, 2004). Patients often experience shame, guilt, demoralization, and depression due to the negative perceptions of others (Jackson, 2005). A lot of these negative perceptions come from common misconceptions about pain and pain sufferers, such as pain is illusory or is caused by psychological disturbance; patients should be able to tolerate pain better as time goes on; chronic pain must be due to character weakness; patients are using pain to obtain narcotics for the euphoric effects; or patients might be using pain for secondary gains, that is for attention, sympathy or financial compensation and resist getting better (Avery, n.d.; Jackson, 2005).

Patients are often viewed as being whiners and complainers, illness-fixed, weak, malingerers or even fakers (Werner et al., 2004). Experts say that “stigma is a magnifier of pain", and that "it boils down to one word ‘discrimination’” (Avery, n.d., sec 1. 4.).

It is important to note that stigma does not always arise from external sources but also from patients themselves (Jackson, 2005). Chronic pain patients often demonstrate as a tendency to self-blame in that they accuse themselves for the suffering. Both “enacted stigma” which is the actual discrimination and felt stigma referring to the fear of such discrimination can “lower the sufferer's self esteem, creating the inner sense of being discredited or discreditable, which over time spoils his or her identity” (Kleinman et al., 1995, p. 1319).

Werner and Malterud’s (2003) study on women suffering from chronic pain showed that they not only struggle for the credibility to be believed, understood and taken seriously in the medical system but also for their self-esteem or dignity as patients and as women. Other studies support that suffering from chronic pain is not merely a biological experience (Åsbring & Närvänen, 2002; Good, 1994; Jackson, 1992; Kugelmann, 1999; Lillrank, 2003; Ware, 1992) but “a moral event, concerning shame and blame, responsibility and stigmatization: The patients strive to legitimize their chronic illness and to achieve a sick role” (Werner et al., 2004, p. 1036).

Culture of pain and communitas. Social isolation is a major problem in chronic pain patients, which often happens due to decreased involvement in work, recreational activities or participation in social interactions in general. Part of the reason why chronic pain patients pull themselves away from social contact is because of the feeling of not being understood, believed or taken seriously by others including family, co-workers and healthcare professionals (Werner & Malterud, 2003). Chronic pain patients often claim that their experience of pain can only be fully communicated and comprehended by fellow patients who know what it like to suffer from pain (Glenton, 2003; Werner et al., 2004).

Jackson (1994) makes an important discussion of the social/cultural meaning of pain for the chronic pain patients, and how the concept of *communitas* can be applied in understanding the

patients' effort to communicate and search for the meaning of their pain. She stresses that their failure in these efforts is due to the incommensurability of the language between the everyday-world of the non-sufferers and the pain sufferers' "pain-full" world (P. 220). She continues that even though pain is a quintessentially private experience, it can become socially sharable when communicated amongst the other pain sufferers thus creating a *communitas.* The sense of being understood and accepted by others through this communitas can bring a powerful sense of healing to the chronic pain patients.

2.1.3.5 The existential aspect of pain - Pain as existential crisis and work of creation as the antidote.

Chronic pain as existential affliction. Qualitative studies from the fields of sociology, medical anthropology and human science literature have provided more in-depth understanding of the lived experience of people living with chronic pain, claiming that a person's lived reality of pain is far more than physical sensation and rather a threat to the integrity of self, identity and the entire personhood (Charmaz, 1999; Good, 1992; Jackson, 1994). Patients' experiences of the detrimental impact of living with chronic pain have been portrayed as "dissolution of self" (Good, 1994, p. 126), "an existential affliction" (Jackson, 1994, p. 203), or "the unmaking of one's lifeworld" (Scarry, 1985, p. 161). "Lifeword" is Husserl's concept in phenomenology that refers to "all the immediate experiences, activities, and contacts that make up the world of an individual or corporate life" (Beyer, 2015). According to Scarry (1985), the way one may reverse this world-destroying, and de-objectifying work of pain and reconstitute the world is by "forcing pain itself into avenues of objectification" (p. 6). The goal and healing mechanism for many integrative pain rehabilitation approaches are based in part on such objectification and reconstituting of the threatened lifeworld (Byron, 1994).

Objectlessness of pain and the creative act. Scarry (1985) provides an in-depth enquiry of the phenomenon of objectlessness of pain and the relationship between physical pain and imagining. Scarry (1985) points out that distinct to all the other internal states of consciousness of

human experience, physical pain stands alone by the fact that it does not have objects in the external world. Bodily sensations other than pain such as vision, hearing or touch have their objects outside of body boundaries; psychic events such as desire or fear also have tangible objects in the outside world, as "desire is desire of *x*, fear is fear of *y*, hunger is hunger for *z*; but pain is not "of" or "for" anything- it is itself alone" (p.162). She argues that because an object is "an extension of, and an expression of a state" (p. 164), when any state is deprived of its object, it begins to approach the condition of pain and naturally begins the process of generating its object, thus allowing the state to be experienced possibly positive rather than utterly aversive. Physical pain is a state that lacks a concrete external object as well as being an intense and aversive perceptual event, and thus creates the urge for one to "move out and away from the body"(p.162).

Scarry argues that as a state deprived of its object becomes close to physical pain, conversely, when physical pain is transformed into an objectified state, it can be experienced as pleasurable or at the very least, as less aversive. According to Scarry, an extraordinary way through which human reverses the detrimental effect of the objectless nature of pain and creates an avenue of objectification for pain is the *imagination*. She describes imagination as the only state as anomalous as pain and as the intentional counterpart of pain, since "while pain is a state remarkable for being wholly without objects, the imagination is remarkable for being the only state that is wholly its objects" (p. 162). Because there is no concrete external object or referential content for pain in the natural world, one may use imagination as a "last resort"(p.166) to generate the object through one's own symbols, metaphor, artifacts, identity or even shape to pain. Figure 1 illustrates this concept (Scarry, 1985).

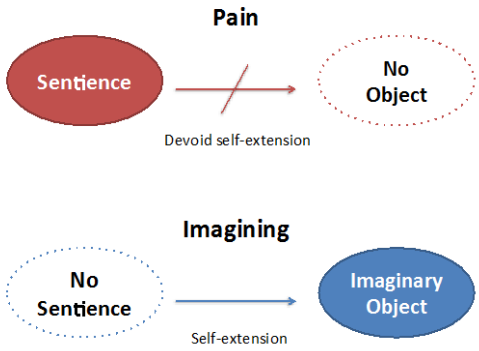


Figure 1. Pain and imagining

Scarry suggests the word "work" as a shared characteristic of pain and created object. Work means the activity or labor of creation and the created object at the same time. She says "the more it (work) realizes and transforms itself in its object, the closer it is to the imagination, to art, to culture; the more it is unable to bring forth and object…. is then cut off from its object, the more it approaches the condition of pain" (p.169). The process of objectification through the work of describing one's pain in symbols and metaphors will first help individuals to move toward the body again and then because pain is projected to these images, it can be lifted away, taking some of the adversity of pain with it (Scarry, 1985). She also states that through this movement toward external world, the extreme privacy and invisibility of pain and imagination becomes sharable, making the sentience social. In addition, objectification of pain can serve as a way to help individuals to regain a sense of control and a sense of agency. Scarry says,

> Physical pain intends nothing; it is wholly passive; it is "suffered" rather than willed or directed. Pain only becomes an intentional state once it is brought into relation with the objectifying power of the imagination: through that relation, pain will be transformed from a wholly passive and helpless occurrence into a self-modifying and when most successful, self-eliminating one…. the wholly passive and acute suffering of physical pain becomes the self-regulated and modest suffering of work. Work is then, a diminution of pain: the *aversive intensity* of pain becomes in work *controlled discomfort* (p. 164)

This process of externalization and creation has been a fundamental principle and a rationale for Creative Arts Therapies (CAT) practice for chronic pain management (Bradt, 2013; Bradt, Dileo, & Shim, 2013; Bullington, Sjöström-Flanagan, Nordemar, & Nordemar, 2005; Christie, 2006; Hass-Cohen & Clyde Findlay, 2009). As pain destroys language and the objectless nature of pain gives rise to imagining and the creation of artifacts and symbols, a nonverbal therapeutic intervention that utilizes creative exploration of life issues through various modes of symbols and metaphors makes an especially appropriate method for chronic pain management. In addition, the fact that CATs use a self-directed approach, which encourages individuals to create imaginary materials that are self-generated and have personal meaning to them, the process of objectification may have a powerful therapeutic effect allowing them feel a sense of control and transform the suffering thus empowering them to reconstruct their mind-body world pole.

2.1.4 Treatment Approaches for Chronic Pain

2.1.4.1 Conventional chronic pain management. Considering the fact that pain affects multiple systems of human functioning, the conceptualization of treating or coping with the effect of pain also has to involve multiple dimensions (Sturgeon & Zautra, 2010). Nevertheless, conventional pain treatment continues to be based on the classic Cartesian dualistic view of mind and body as separate entities that function independently (Gatchel et al., 2007). The biomedical model often ends up in reductionism and medico-centrism, as it tends to consider "biological factors and cellular pathologies as 'something', whereas illness provoking psycho-social circumstances as 'nothing'" (Johansson, Hamberg, Westman, & Lindgren, 1999, p. 1792). Consequently, the focus of clinical pain treatment has been limited to the *control* of nociceptive processing, and in general, the management of pain heavily relies on pharmacological treatment such as opioids or other analgesic drugs and NSAIDS, which can cause complex side effects or drug addiction (McCracken, 1998).

2.1.4.2 Complementary and alternative medicine for pain. The shortfall of traditional biomedical pain models and recognizing the inadequacy of the treatments based on these unidimensional approaches became the impetus for a more intricate and integrative model of pain management (Gatchel et al., 2007). With the development of a multidimensional perspective of pain, alternative treatment strategies to approach chronic pain from psychological point of view have been developed (Haugli, Steen, Lærum, Nygard, & Finset, 2001).

Since the early 1990's Complementary and Alternative Medicine (CAM) has been on the rise and people are widely seeking CAM for chronic pain management. A survey by the National Institute of Health revealed that the most common condition that was cited as a reason for using CAM was back pain followed by neck pain, joint pain, and arthritis; almost 40% or the chronic pain patients reported that they have used at least one form of CAM for their pain condition (National Center for Complementary and Alternative Medicine (NCCAM, 2011). According NCCAM, The examples of CAM therapies people seek for chronic pain management include dietary supplements, various herbs, and mind and body approaches, such as acupuncture, guided imagery, hypnotherapy, massage, meditation, relaxation therapy, spinal manipulation, tai chi, and yoga. Although the mechanisms may vary, the emphasis of these treatments is placed on the interaction of mind, body and emotion to promote wellness via promoting a sense of balance, harmony and healing (Snyner & Wieland, 2003). Even though CAM may not eliminate pain, it may reduce the use of pain medication and improve a patient's sense of control (Kulich & Andrew, 2006).

2.1.4.3 Positive health concepts in chronic pain management. In the view of traditional medicine, health is viewed as the absence of illness and pathology. This has been the primary focus of the formal U.S. health care system, namely to treat disease and sickness, and to "restore" the patient to health (Kent & Davis, 2010). However WHO's (1948) Constitution defines health as " a state of complete physical social and emotional well-being, and not merely the absence of disease or infirmity" (as cited in, Mezzich, 2005, p.177), which operationalizes health not only as

living long but also living well. Kent and Davis (2010) introduces a more contemporary definition of health and its implication as follows:

> Health is defined as the harmonious integration of mind, body, and spirit within a responsive community. This normative definition places equal weight on both physical-psychological-spiritual integration and its interdependence within a responsive social-ecological environment. (p. 510)

Despite the changing perspective on health, unfortunately chronic pain management continues to focus on pathology. Chronic pain management is still guided by the traditional biomedical model in the formal health care system, evidenced by a continued focus of treatment on the control of nociception through pharmacological treatment rather than on psychological and social factors associated with the person's pain experience. Some scholars have argued for a much-needed shift from pathology to positive health concepts in chronic pain management (Craig, 1999; Flor & Turk, 2011; Main & Spanswick, 2000; Turk & Monarch, 2002), following the call to pay systematic attention to human resilience and strength as crucial for enhancing the concept of health.

2.1.4.4 Meaning and narratives in chronic pain management.

Meaning and suffering. It has been proposed that the toughest issue individuals with chronic pain face is the struggle to find meaning of their pain and a language for expression of their experience (Bullington, Nordemar, Nordemar, & Sjöström-Flanagan, 2003; Deal, 2011; Dunn, 2004; Good, 1994; Johansson et al., 1999; LaChapelle, Lavoie, & Boudreau, 2008). McWilliams, Cox, and Enns (2003) explain that the individuals afflicted by chronic pain experience "a meaningless suffering that break down their personality and depletes them of energy, initiative, and joy of living" (as cited in Bullington, 2005, p. 261). According to Egnew (2009);

> Because suffering arises from the meaning ascribed to events, it engenders a crisis of meaning as previous meanings attributed to the sufferer's experience no longer apply. . . . . Suffering fills the chasm of meaninglessness that opens when the patient's previously held meaning structures have been destroyed and new ones are yet to be constructed. (p. 171)

Because suffering arises in a void of meaninglessness, one may transform the experience by finding meaning and thus can transcend the suffering (Egnew, 2009). Victor Frankel (1984) observes "suffering ceases to be suffering in some way at the moment it finds a meaning" (as cited in Egnew, 2009, p. 172). By making meaning out of suffering, one may gain a measure of control over it (Deal, 2011), and the newly discovered meaning may influence the "ability to accept, endure, and sometimes transform or overcome the suffering" (Reed, 2003, as cited in Deal, 2011, p. 206). A physician Jeff Kane (2003) has claimed that "meaning is as central to healing as the skeleton to the body" (as cited in Egnew, 2009, p. 172).

Scientific evidence has demonstrated the importance of meaning in physical and psychological health and well-being. Bower and colleague's (2003) study reported that positive changes in meaning-related goals resulted in increases in the natural killer cell cytotoxicity, a measure of immune-system functioning. A longitudinal study by Jacobson (2002) showed that change in life meaning predicted positive change in mental health (as cited in Lightsey, 2006). A study with patients with chronic pain revealed that higher life meaning was related to less depression, pain intensity, and physical disability due to pain (Park, 2003).

Narratives as a critical method of healing in chronic pain patients. Throughout the literature on the issue of chronic pain and coping, it has been extensively emphasized that the way pain-afflicted individuals can counter the "unmaking" of lifeworld and reconstitute the self, is through making sense of their experience and finding meaning of pain through creating narratives (Frank, 1995; Frankl, 1984; Good, 1994; Jackson, 1994; Scarry, 1985). Frank (1995) speaks about how people with illness feel the strong need to tell their stories, and telling stories about their illness is to give voice to the body. Scarry (1985) also writes, "physical pain has no voice, but when it at last finds a voice, it begins to tell a story" (p.3). An author Anatole Broyard (1992) who chronicled his own experience of illness says, "my first instinct was to try to bring it under control by turning it into a narrative. Always in emergencies we invent narratives" (p. 19). Good (1992) discusses that narratives are central to the understanding of an individual's experience of

pain by placing pain in a meaningful order in time and context of one's life world. The special need the individuals with chronic pain experience comes from facing the crisis of objectification and urge to fashion meaning; therefore through narrativization, one can imaginatively link the experience and events into a meaningful story or plot, imagine a means of overcoming adversity and open the future to a positive ending thus being able to counter the self-dissolution and reconstitute the world (Good, 1992; Good, 1994).

Narrative plays a role in addressing multiple issues related to the pain experience. Yung (1997) asserts that narrative re-inscribes the objectified body into discourses of subjectivity. When people experience disembodiment from being a medical object in the course of their illness, constituting a narrative may help them to create an alternative locus of disembodied self thus provide a foothold for their selfhood. Frank (1995) says, "Telling stories of illness is the attempt to give voice to an experience that medicine cannot describe. This voice is embodied in a specific person but it is equally social" (p. 18). He explains that all stories have an element of *testimony,* and telling stories change one's own life by affecting the lives of others who listen to them. Storytelling is a privileged medium of placing one's self and body within the "community of pain"; and the feeling of being heard and understood in this community can bring a sense of healing (Jackson, 1994).

2.2 Resilience

2.2.1 Definition and Background

Resilience is considered as one of the most heuristic and integrative concepts to have emerged in the social science inquiry on human adaptation as a result of the shift from focusing on the pathology or risk factors to attending to the strengths of the people (Zautra & Reich, 2011). This paradigm shift from a disease model to a strength-based model has taken place not only in the social sciences but also in psychology and science in general. This has significantly changed the understanding of how people adapt to and even grow in the context of significant adversity of

life stress (Zautra & Reich, 2011). Current definitions of psychological resilience are varied. It has been construed as a personal trait or attribute (Bonanno, 2004; Brooks, 2005), protective factors, processes or mechanisms (Hjemdal, 2006; Rutter, 2006), or an outcome of adaptation efforts (Zautra & Reich, 2011). Although there is lack of consensus on an operational definition of resilience, fundamentally resilience refers to the capacity for, process of, or outcome of successful adaptation in the context of distress or high risk status; it is the ability to maintain or regain psychological well-being and physiological homeostasis despite adversity (Friborg et al., 2006; Herrman et al., 2011; Karoly & Ruehlman, 2006; Sturgeon & Zautra, 2010).

Throughout history, humans have always been fascinated by the stories about triumph in the face of adversity, and they have inspired pioneering psychologists and psychiatrists to take a scientific look at this phenomena starting about four decades ago (Masten, 2007). These pioneering scholars initially focused on those people who were at “high risk” for developing psychiatric problems due to their family history or environmental disadvantages yet demonstrated unexpectedly positive development. They followed the lives of these individuals and tried to study what factors were responsible for helping them overcome the odds against them (Masten & Wright, 2010). Therefore, the concept of resilience first arose in the field of child development, based on observations of those children who sustained positive functioning and development despite the presence of significant risk factors such as abuse or low socioeconomic status (Sturgeon & Zautra, 2010). Since historical development of the resilince is closely related to developmental psychopathology, the majority of research on resilience has concentrated on the earlier part of the lifespan (Fergus & Zimmerman, 2005). However experts claim that “since adversity can occur at any point in development, with consequences that potentially alter development over the near and the far term, a lifespan developmental perspective is essential for a full understanding of resilience”(Masten & Wright, 2010, p. 216).

2.2.2 Construct of resilience

Resilience is a multidimensional construct, and there exist inconsistencies in the conceptualization of resilience. Largely, conceptualization of resilience as personality traits, as a dynamic process or as an outcome, has been used interchangeably by researchers (Shaikh & Kauppi, 2010). The construct of resilience as *personality traits* is described as "the ability of individuals to adapt successfully in the face of acute stress, trauma, or chronic adversity, maintaining or rapidly regaining psychological well-being and physiological homeostasis" (Feder, Nestler, Westphal, & Charney, 2010, p. 35). The identified personality traits include activity level, optimism, positive responsiveness to others, equanimity, perseverance, self-reliance, meaningfulness and existential aloneness (Greeff & Ritman, 2005; Jacelon, 1997, as cited in Shaikh & Kauppi, 2010).

Resilience as a *process* sees resilience as processes or mechanisms that contribute to a good outcome, despite significant stress or adversity (Hjemdal et al., 2006). According to this view "various factors and systems contribute as an interactive dynamic process that increases resilience relative to adversity; and resilience may be context and time specific" (Herrman et al., 2011, p. 260). There are multiple sources and pathways to resilience which often interact, including biological factors (e.g., genetics, immune functioning, and neuroendocrine), dispositional attributes (e.g., intellectual functioning, social disposition), family aspects (e.g., a caring parent figure, connection to extended family networks), and social support and other attributes of social systems (e.g., bonds to prosocial adults outside the family, attendance at effective schools) (Herrman et al., 2011; Luthar & Cicchetti, 2000; Shaikh & Kauppi, 2010).

Resilience as *positive adaptation/outcome* equates resilience with a pattern of positive adaptation in the context of significant risk or adversity. With this view, an individual is considered as resilient when he or she has successfully overcome exposure to a risk (Stevenson & Zimmerman, 2005).

Earlier theories emphasized the view of resilience as personal traits, yet other scholars claim that resilience should not be conceptualized as a static trait or characteristic of an individual (Luthar & Cicchetti, 2000; Masten & Wright, 2010). It is asserted that conceiving resilience as personal attributes that are unchanging may be pathologizing an individual who lacks resilience; and moreover, it "reduces the dynamic capacity of the systems to surprise us with their facility to learn new adaptation strategies on the run" (Reich, Zautura, & Hall, 2010, p.xiv). Reich, Zautra and Hall (2010) denote that scholars who see resilience as process propose a more open process model in which adaptation to stress is conceived of as a dynamic process involving internal capacities and external resources, and putting a focus on a resilience outcome opens up to a more multifaceted approach to the "cause-outcome" sequence (p.xiv).

A significant component of resilience construct as process is the identification of *protective* and *vulnerability* factors (Luthar, 2000). Rutter (1985) refers to protective factors as processes that "modify, ameliorate or alter" the negative effects of adversity (p. 600). Risk factors are influences that directly correlate with poor or negative outcomes "while resilience is considered to reflect protective factors which may moderate the effects of the risk factors so that the adaptation is positive" (Masten et al., 1990, as cited in Kauppi, 2010, p.160). Masten and colleagues (2004) use the term *core resources*, which can be thought of as a foundation or an early predictor of resilience resources. *Promotive factors* and *adaptive resources* are other commonly used terms by other scholars that refer to internal factors which are utilized in the context of stress like adaptive capability (Olsson et al., 2003). Luecken and Gress (2010) suggest that "together, protective factors and adaptive resources, constitute a more complete concept of individual-level factors in resilience" (p.243).

Specific resilience protective and risk factors have been identified by several scholars and researchers, and they are varied depending on the lifespan and specific populations in terms of the type of challenges or adversity (e.g. socioeconomic, trauma, illness). Some of the recognized promotive/protective factors are positive emotions, emotional stability, positive coping skills,

social support, finding meaning, self-esteem, self-efficacy, reflective skills, hope, creativity, flexibility, humor, and spirituality. Risk/vulnerability factors include depression, social stress, poor coping skills, abuse, violence, lack of social support and others (Carver, 1998; Kumpfer, 1999; Luthar & Cicchetti, 2000). The idea that specific protective and risk factors contribute or take away from resilience suggests that an intervention that targets these factors may impact the resilience mechanism, thus being able to enhance resilience in individuals (Luthar, Cicchetti, & Becker, 2000; Sturgeon & Zautra, 2010; A. J. Zautra, Hall, Murray, & Group, 2008).

2.2.3 Resilience as a New Paradigm for Chronic Pain

The original meaning of the English word "resilience" is to bounce or spring back (Smith et al., 2008). Since the concept of resilience refers to "successful adaptation that unfolds within a context of significant and usually debilitating adversity or life stress" (Karoly & Ruehlman, 2006, p. 90), this ability to bounce back or recover, "may be particularly important for people who are already ill or are dealing with ongoing health-related stresses" (Smith et al., 2008, p.194). Likewise because resilience takes a different trajectory than recovery (Bonanno, 2004), the ''health-despite-adversity'' notion of resilience fits well for the treatment of patients coping with chronic pain. According to Sturgeon (2010), resilience is "an integrative perspective that can illuminate the traits and mechanisms underlying the sustainability of a good life and recovery from distress for individuals with chronic pain" (Sturgeon & Zautra, 2010, p. 105). Also, empirical evidence has shown how resilience resources and mechanisms can become a key factor in chronic pain sufferer's adaptation and coping responses (Friborg et al., 2006; Karoly & Ruehlman, 2006; Ong, Reid, & Zautra, 2010; Smith et al., 2009; Sturgeon & Zautra, 2010). Resilient individuals demonstrate significantly more positive results in coping style, pain attitudes and beliefs, catastrophizing tendencies, positive and negative social responses to pain, and health care and medication utilization patterns, when compared to non-resilient individuals (Karoly & Ruehlman, 2006). Friborg and colleagues' (2006) laboratory-induced pain study to investigate the effect of resilience as a moderator of pain and stress showed that individuals with high

resilience score reported less pain and stress. A study with actual chronic pain patients was conducted by Ong, Zautra, and Reid (2010) demonstrated an interesting mediating relationship between positive emotion, pain catastrophizing, and resilience. The results showed that experience of positive emotion counteract pain catastrophzing, and thereby reinforce resilience.

Although resilience as well as general positive health concepts is relatively new concepts in mainstream health care, and further research is needed to understand the form and mechanism of resilience in chronic pain, the present findings indicate the importance of integrating the resilience factors in the psychological treatment of pain conditions, and provides important guidance to pain management programs (Sturgeon & Zautra, 2010; Friborg et al., 2006).

2.2.3.1 Meaning and resilience in chronic pain. Throughout the resilience literature on the issue of chronic pain, it is stated that one of the most important resources for resilience for the people coping with long term suffering like chronic pain, is finding meaning and purpose in one's life (Haase, 2004; Lightsey, 2006; Sturgeon & Zautra, 2010). Haase (2004) proposes that derived meaning in one's health and illness related experience might play a role as a protective factor in building resilience. Since meaning-making is "a bridge from the negative emotion caused by negative life events to positive emotion through cognitive restructuring" (Lightsey, 2006, p. 103), it might play a positive role in taming the negative cognitive-emotional issues such as pain catastrophizing or fear avoidance behavior, thus helping the patients to better cope with the adversity of overall pain experience. In addition, some resilience models propose to expand the construct of resilience from coping to encompass development or even growth (Bonanno, 2004; Lightsey, 2006; Zautra & Reich, 2011). Folkman (1980), one of the pioneers in researching and exploring the concept of resilience found and reported that in the midst of people's stressful life circumstances, also co-occurred the positive affect that can facilitate adaptive capacity which can moderate the negative effect of the stressful experiences and enhance their well-being despite the aversive conditions (as cited in Zautra & Reich, 2011). Therefore it is propositioned that through finding meaning in adversity, one may find the positive and strength, gain new insight and greater

mastery from overcoming the stressful experience and achieve a sense of well-being despite the adversity (Ryff & Singer, 1998; Zautra, Arewasikporn, & Davis, 2010).

Above information indicates that an intervention, which can foster resilience through facilitating the meaning making process, might be useful in psychological treatment of chronic pain patients. Moreover, considering Zautura et al.'s (2010) statement, "To fully understand resilience in adults, we advocate a mind-body approach that incorporates both physical and mental health, and the interactions between the two" (p.16), the use of a mind/body intervention in which one may experience the integration of body and mind and make meaning through the creative process of movement such as Dance/Movement Therapy (DMT), might be a valuable approach in chronic pain management.

2.3 Dance/Movement Therapy for Chronic Pain Management

2.3.1 Therapeutic Factors of DMT for Chronic Pain

Dance/Movement Therapy is "the psychotherapeutic use of movement to further the emotional, cognitive, physical and social integration of the individual" (ADTA, 2009). Historically, DMT has been used predominantly in the domain of mental health and special education, yet there has been abundant interest and clinical evidence of its use in medical settings (Goodill, 2005). Although there has not been a comprehensive theoretical explanation of the therapeutic mechanisms involved in DMT for chronic pain management, and only few DMT research studies have been conducted with this population, there are some fundamental premises of DMT that position it as a potentially unique and effective intervention for chronic pain management.

2.3.1.1 Mind-body integration. One of the most significant destructive impacts of chronic pain is the disintegration, dissociation, and deconstruction of one's mind-body self (Charmaz, 1995; Good, 1992; Morse & Mitcham, 1998). Chronic pain patients often engage in

dissociation from their body or feelings, also known as disembodiment, as a survival strategy or an effort to protect the self from the overwhelming physical pain (Charmaz, 1995; Morse & Mitcham, 1998; Osborn & Smith, 2006). Considering the notion of embodiment as the existential ground of self (Merleau-Ponty, 1962), it is recommended that the focus of the treatment approach and healing process for chronic pain be based on the principle of embodiment (Bullington, 2009).

In DMT, the pathways of mind/body influence have always been understood as reciprocal and bidirectional (Levy, 1988). This fundamental principle of DMT suggests that DMT can play a unique role in restoring the wholeness and integrity of the mind, body, and emotion of those who are coping with chronic pain.

Because of its focus on mind-body integration, DMT can (a) facilitate acceptance of pain by helping the person with chronic pain to stop fighting his or her body's experience (Gorham & Imus, 1999, as cited in Goodill, 2005); (b) instill a sense that the body can become once again "mine"(Bullington, Sjöström-Flanagan, Nordemar, & Nordemar, 2005, p. 263); and (c) regain the sense of 'being with the self' regardless of physical pain (Christie, 2006, p. 572). During the DMT process, the therapist may help the patient to experience her body "as part of herself rather than something alien and threatening" (Bullington et al., 2005, p. 266) by increasing kinesthetic awareness, which allows her to sense through the body and to be in contact with her body in motion. As the patient become more present in her body and attend to "what her body has to say", certain emotional states, images or ideas may emerge from the movement experience. These can be subsequently conceptualized through verbalization and help the patients to realize their meaning. Through this process, "the sensed, kinesthetic, and motoric connections between cognitive process, emotional responses, interactional patterns" (Goodill, 2005, p.16) can take place, and the patient may feel an increased sense of wholeness and the restoration of unity.

When the patient's body once again becomes "mine", patients may become more aware of body signals that could help guide them to keep balance and structure in life so that they can get through their daily routines and manage their pain more effectively (Bullington et al., 2005).

Furthermore, increased awareness of self and integrity through embodiment could empower the patient as an agency of self rather than being the victim whose body has been taken over by pain. Therefore, DMT interventions can be a powerful way to re-weave the broken connection between the body, emotion, mind, and one's lifeworld (Hanna, 1995), thereby restoring the unity and the sense of wholeness.

2.3.1.2 Relaxation. Relaxation is one of the primary goals of DMT intervention for the medically ill, not unlike many other mind/body disciplines. Relaxation is particularly crucial in pain management as physical and/or mental tension can make the pain worse (Schaffer & Yucha, 2004). Relaxation can play a important role in breaking the pain-stress cycle by lowering heart rate and blood pressure, relaxing muscle tensions, reducing anxiety, and allowing individuals to feel a sense of control and well-being (McCaffrey, 1999; Shelby & McCane, 1998).

Bullington (2005) illustrates,

> Pain literally locks the body in a stiff, rigid armor, hindering freedom of movement and forcing attention to body sensations rather than thoughts, feelings, memories, or the beckoning of the world. The body rigidity is often paralleled by reduction in the emotional register. "To loosen up" is to gain flexibility of body and psyche and acquire a sense of new possibilities, an experience that was found to be one of the turning points in the therapeutic process.

Dance allows individuals to reduce tension and discharge energy through muscular-skeletal responses (Hanna, 1995). In the context of therapy, dance/movement can be used to target the rigidity on all levels – physical, emotional, and cognitive- of persons with chronic pain (Bullington, 2005). Dance/movement therapy exercises aimed at relaxation may "provide a pleasant experience in the body, devoid of the frustrations or pain that may accompany movement when the body is impaired" (Goodill, 2005, p.192). This positive experience of gaining pleasure through movement may help break the "movement = pain" scheme and reduce the fear-avoidance phenomenon (Bullington, 2005). Relaxation in DMT is also aimed at "helping the patient develop skills of conscious body perception and energy modulation" (Goodill, p.192), which may help an

individual to increase sensitivity toward his or her own condition and provide a tool for self-management of pain.

2.3.1.3 Sense of mastery and control. One of the core outcomes for chronic pain patients is self-efficacy, which refers to personal judgment of how well a person believes he or she can perform specific behaviors in particular situations (Bandura, 1977). Self-efficacy is typically low in individuals suffering from pain as many perceive that the pain has taken over their body, and that they have lost a sense of control over their own body (Afrell, Biguet, & Rudebeck, 2007). Self-efficacy has been reported as one of the most significant factors in chronic pain management as it is associated negatively with pain intensity, disability and depressive symptoms, and positively with use of pain coping strategies and better outcomes for managing pain (Arstein, 1999; Jensen et al., 1991; Lorig et al., 1993).

Sheets-Johnstone (2010) claims that dance/movement has a distinctive power in building a sense of agency in individuals:

> The repertoire of ‘‘I can’s’’ is built up on the basis of developing synergies of meaningful movement, which are the foundation of our sense of agency . . . . and movement validates and gives expression to . . . . the sense of agency, of capability, hence in the sense of a kinesthetic/kinetic reality. Movement is indeed the basis of our experience of ourselves as capable and effective agents in the world. (p.123)

While moving, individuals experience the mastery of sequence of a movement or dance and may feel “a sense of being in charge of their body and action, its appearance, and health” (Hanna, 1995, p.326). Hanna (1995) continues that dance/movement experiences can help individuals to gain a “sense of control toward healing through mastery of dance/movement” (Hanna, 1995, p. 326). Goodill (2005) explains how DMT may be a unique discipline that may “be suited to the goal of increasing self-efficacy and internal health locus of control for medical patients who need intervention in these areas” among other mind/body disciplines (p. 41). DMT is fundamentally a patient-initiated intervention. During the therapy session, patients initiate expressive movement, and are given opportunities to lead movement in the form of leading warm-up exercises or taking a leadership role through mirroring exercises. The experience of

self-mastery through body and movement can contribute to positive self-perception, body image, self-esteem, and self-confidence (Hanna, 1995), which, in turn, may enhance an individual's sense of agency over their body and confidence in managing their pain.

2.3.1.4 Emotional expression and positive emotions. As pain is defined as an unpleasant emotional experience as well as a physical sensation, affective factors (primarily negative) are closely associated with chronic pain experience (Flor & Turk, 2011). Negative emotions such as fear, anxiety, anger, and depression are prevalent among chronic pain patients, and exist in a reciprocal causal relationship with chronic pain. Therefore, effective treatment of these affective factors is critical in chronic pain management (Craig, 1999).

DMT work is based on utilizing the direct relationship between body, movement and emotion (Levy, 1988). DMT provides a safe environment for individuals to express their negative emotions. However, DMT work involves a process that goes beyond simply experiencing an emotional discharge through movement. Instead, it includes a process through which individuals "work through" those emotions by verbalizing thus incorporating them into their awareness and coping behaviors. Experiencing positive emotions have been reported as playing an important role in coping in the midst of adverse circumstances (Folkman & Moskowitz, 2000, as cited in Goodill, 2005). A DMT study with patients with chronic fatigue syndrome reported that participants valued the effect of DMT on generating positive emotions including sense of joy, happiness, love, satisfaction, peacefulness and well-being (Blázquez, Guillamó, & Javierre, 2010). Several other studies have reported on the ability of DMT to decrease negative emotions and promote positive mood states (Dibbel-Hope, 2000; Krantz, 1994; Mannheim & Weis, 2006; Serlin, Classen, Frances, & Angell, 2000).

It is important to emphasize that stimulating positive emotions is more than simply making people "feel good". Enhanced positive emotions in people with chronic pain has been related to reduction of pain catastrophizing (Ong, Reid, & Zautra, 2010) and increased cognitive

resilience to pain (Zautra, Johnson, & Davis, 2005), and therefore is considered a significant component of effective chronic pain management.

2.3.1.5 Meaning-making through symbolic expression. It is recognized that the toughest issue individuals with chronic pain face is the struggle to find (a) meaning of their pain and (b) a language for expression of their experience (Deal, 2011; Dunn, 2004; Good, 1994; Johansson et al., 1999; LaChapelle et al., 2008). For those who suffer from a condition that has no hope for a cure, like chronic pain, finding meaning becomes very important for one's psychological well-being and overall health (Risdona et al, 2003). Due to the invisible and ineffable nature of pain, chronic pain sufferers often find verbal therapies too abstract or inappropriate. Given that alexithymia (i.e. a condition in which one has difficulty thinking and talking about their emotions and processing feelings verbally) is common amongst people with chronic pain, this is not surprising (Bojner Horwitz, Kowalski, Theorell, & Anderberg, 2006, p. 12). DMT can offer a distinctive way for individuals with chronic pain to fashion meaning of their experience through the creative process of symbolic movement expression. Corporeality of meaning is a cornerstone of DMT and is accurately described by Sheets-Johnstone (1990) as follows:

> Meanings are not free-floating entities; meanings are incarnated, anchored in living bodies. It is clear why corporeal representation is a fundamental biological matrix. It is a primary mode of symbolization and communication. Where meanings are represented, animate bodies represent them corporeally. In their form and behavior animate bodies are potential semantic templates. This is why a psychology, aesthetics, archeology, and linguistics of symbolizing behavior is possible (p. 121).

Dance/Movement therapists thus operate from the basic assumption that all human experiences and knowledge is inevitably embodied, and therefore, the body is a site of knowledge (Hervey, 2000). An individual's body is viewed as "an experiential and memory repository for what we "know", which may emerge through dance in unexpected way" (Stinson, 2004, as cited in Levy, 2011, p.184). So in the therapy process, the body becomes a tool through which

meaning is created (Levy, 2011), and through embodiment, patients come to encounter cognitive, affective and intuitive knowledge (Pelias, 2008).

One of the ways a chronic pain patient may make meaning in DMT is by experiencing one's self in relation to one's pain. Most chronic pain patients will go through great length to find a medical diagnosis of their pain. Such diagnosis not only gives them a socially acceptable label for their suffering but also helps them to separate themselves from the pain and be able to look at it objectively (Good, 1992). Unfortunately, all too often, chronic pain patients are confronted with the reality to that no medical diagnosis can adequately explain their pain. In light of this, Bullington (2009) has suggested that being able to articulate the meaning of their pain through creating embodied symbols or metaphor, may allow them to differentiate themselves from the pain (Bullington, 2009). Consequently, the pain may become something they can examine from a distance hence being able to deal with it instead of being taken over by it.

Clinical cases have shown that through meaning-making in DMT, chronic pain patients can move from chaos and disintegration towards a sense of coherence on all levels from the bodily emotional register to the cognitive level of self-understanding and identity (Bullington, 2003).

2.3.1.6 Escape/diversion. One of the most commonly used and endorsed pain management strategies is engaging in thoughts or activities that distract one's attention from pain (Johnson, 2005). Indeed, many complementary therapies are based on the G*ate Control Theory of Pain* which explains that "attentional processes such as distracting oneself from pain by engaging in an imagery world act through the descending central control trigger and activate inhibitory interneurons in the dorsal horn" (Flor & Turk, 2011, p. 36) thereby attenuating the pain perception. Dance has esthetic and transcendental potential as it allows individuals to escape pain by leading to "altered states of consciousness and an extraordinary metaphysical-physical experience" (Hanna, 1995, p.325). Goodill (2005), when introducing the work by Achterberg (1985) who posited that rhythmic aural input might effectively compete with the pain signal,

suggests that “the blending of music and rhythm in DMT may contribute to a potential mechanism for movement’s capacity to reduce pain as well “(p.88).

Moreover, using imagery during the therapy process may lead individuals to move into a “fantasy world” (Hanna, 1995, p.327), “a relaxed state in which the health-beneficial relaxation response is elicited” (Benson, 1975, as cited in Goodill, 2005, p. 52) or “mobile states as in dance healing rituals” (Halperin, 1995, as cited in Goodill, 2005, p. 52). In this altered state of consciousness, the individual’s perceptions of the self and the immediate surroundings are changed, which allows the opening of neurological channels to induce changes in psychophysical process (Goodill, 2005). This mechanism may alter an individual’s pain experience.

Besides the mechanisms listed above, there are other therapeutic factors in DMT that can be applied to address specific needs of chronic pain management such as increasing vitality and mobility, decreasing fatigue, improving body image and self esteem, developing coping skills, and providing social support and so on, but comprehensive review on all these factors is beyond the scope of this literature review at this stage. Thus only several factors that seemed closely relevant based on the chronic pain and resilience literature are included in this review. Following the grounded theory study procedure, literature on the concepts and factors that are identified during the meta-model building process will be reviewed and included later.

2.3.2 Previous DMT Studies On Chronic Pain Patients

To date, little research has focused on the benefits of DMT for chronic pain management. Six clinical studies, conducted in Europe, have examined the effect of DMT on chronic pain (Blázquez et al., 2010; Bojner-Horwitz, Theorell, & Maria Anderberg, 2003a; Bojner Horwitz et al., 2006; Bullington et al., 2003; Bullington et al., 2005; Horwitz, Theorell, & Anderberg, 2003b). Bojner-Horwitz and colleagues (2003a) conducted a randomized controlled trial (RCT) on the effect of DMT on stress-related hormones in 36 fibromyalgia patients. Participants in the DMT treatment group (20 patients) received one-hour weekly DMT session for 6 months. The wait-list control group (16 patients) did not receive any treatment, but were invited to participate

in DMT treatment after the completion of the study. The treatment sessions were composed of four major themes; a) physical, spatial and interpersonal awareness, b) symbolic movement experience, c) movement/feeling/image/word, and d) differentiation of feelings/integration. The results showed no statistically significant change in stress-related hormones, as measured by blood concentration levels. However, participants in the DMT group were also asked to rate their movement based on a video fragment of the DMT sessions. Their self-rating scores revealed a significant decrease in movement pain and an increase in mobility and life energy. In another RCT study with 36 patients with fibromyalgia by Bojner-Horwitz and colleagues (2006), self-figure drawings were used as a measurement to detect changes in fibromyalgia patients' perception of self-image. The structure of DMT treatment was same as the previous study (Bojner-Horwitz et al., 2003a). Participants in the DMT treatment group showed a significant increase in the "amount of body details" and "percentage of amount of paper used" compared to participants in the control group. According to the authors, these results suggest that DMT enhanced body awareness and body perception.

A mixed methods single group pre-and post design clinical study of DMT with 10 female patients with chronic fatigue syndrome (CFS) – a condition in which musculoskeletal pain is one of the major symptoms- examined the effect of DMT on participants' physical performance and their perception of well-being (Blázquez et al., 2010). The participants attended a one-hour weekly group DMT session for 4-months. The objectives of the treatment included improving patients' overall quality of life by; increasing body awareness, reducing somatic stress, strengthening the resources of the patients' body, improving nonverbal communication, increasing creativity, increasing interpersonal interaction, increasing positive affect and decreasing negative affect. The study participants reported significant improvements in perceptions of well-being in both quantitative and qualitative results, but no significant change was reported for physical performance. The participants reported improvements in body image,

reduction of discomfort, and increase in social support as major benefits from the DMT intervention.

A qualitative study by a Swedish team (Bullington et al., 2005) traced the therapeutic process of chronic pain patients from two case studies-one of which utilized DMT. The main finding was the confirmation of a theoretical construct “meaning out of chaos” which describes a therapeutic process of “finding a deeper existential meaning in the patient’s situation through bodily meaning, improve the patient’s relations to others and strengthen his or he ability to project a possible future form the given life’s situation” (p.273). The participant in DMT treatment reported a positive change in body attitude, coordination, and quality of movement, as well as assertiveness and confidence in social engagement. It also decreased the patient’s fear of movement, which was transferred to the sense of courage to get beyond her pain, resume her life, and install a sense of hope to imagine a future.

A clinical paper by Christie and colleagues (2006) described the positive impact of applying DMT along with drama therapy as a part of a multidisciplinary rehabilitation approach for chronic pain for adolescent girls. The sessions focused on increasing awareness of movement, physical symptoms and psychological symptoms, and bringing integration between bodily expression, thoughts and feelings. According to these authors, the DMT intervention was perceived by the participants as a creative way of contributing to the established treatment program, providing an opportunity for an exploration of new ways of being and expanding abilities. The participants reported that a sense of “reintegration between bodily expression, thoughts and feelings” (Christie, 2006, p. 527) was achieved through DMT participation.

2.3.3 Movement-based Narrative

Throughout the body-in-pain literature it has been extensively emphasized that the way pain-afflicted individuals to counter the “unmaking” of lifeworld and reconstitute the self, is through making sense of their experience and finding meaning of pain through creating narratives (Frank, 1995; Frankl, 1984; Good, 1994; Jackson, 1994; Scarry, 1985). Frank (1995) speaks

about how people with illness feel the strong need to tell their stories, and telling stories about their illness is to give voice to the body. Scarry (1985) also writes, “physical pain has no voice, but when it at last finds a voice, it begins to tell a story” (p.3). Considering the ineffable nature of pain experience and alexithymic characteristics of chronic pain patients, telling a story through the medium of body and movement and making meaning of their pain from the immediacy of body might be a useful intervention.

2.3.3.1 Corporeality of meaning and embodied discourse. Although narratives have been traditionally allocated in the linguistic and cognitive traditions, the propensity of narratives as aesthetic expression, actions and experience has prompted conceiving the notion of narratives as social action, ritual performance or clinical activity (Mattingly, 1998). Especially the significant role of human body and actions in both production and reception of narrative has been recognized (Hevern, 2008). According to Peterson and Langellier, (2006) “narrative requires bodily participation in listening and speaking, reading and writing, seeing and gesturing, and feeling and being touched. In all of these instances, some body performs narrative” (p. 175). The idea of body being the center of narrative production and reception echoes the arguments about the origin of metaphor in the early bodily experience of infants (Lackoff & Johnson, 1980, as cited in Hevern, 2008) and how the early communication between infant and adult take place through using “eyes and faces, hands and feet, voice and movement” (Boyd, 2005, p.163). Sarbin (2003) also suggested, “human emotions reflect embodied actions and emerge from an interaction of physical gesture with narrative emplotment” (as cited in Hevern, 2008, p. 219). In addition to this, the Rocoeurean idea of action as meaningful text (Ricoeur, 1973) and viewing dance, an aesthetic form of action, as text have proposed performance and dance as embodied form of narratives (Blumenfeld-Jones, 1995).

2.3.3.2 Illness narratives - autopathography. *Autopathography* is a term that refers to patients’ narratives of their illness or of expressing themselves other than talking to their doctors. Anne Hunsaker Hawkins (1990) describes it as “a form of autobiography or biography that

describes personal experiences of illness, treatment, and sometimes death." (as cited in Tembeck, 2009, p.5). It also has been called by other terms as "medical confessional", "patient's tale", or "plain tells from the ill" (Aronson, 2000). Although autopathography only refers to written narratives, there have been autopathographical works done in other art forms such as performances, choreographies, art objects, and photographs (Tembeck, 2009). One of the examples that used a form of dance is a multi-media performance piece Still/Here produced by a dancer/choreographer Bill T. Jones (Moyers, 1997). As a HIV positive person himself, Jones said that he wanted to ask a fundamental question "what this time of my life means" (Moyers, 1997). Being driven by the need to derive knowledge about his position and others in similar positions, Jones takes a step of his journey through artistic inquiry. "Let's go out and deal with the people who know, who are frontline," Jones states. The source material gleaned from movement-based workshops called "survival workshops" led by Jones is what later became the basis of his choreography Still/Here. Jones conducted 14 workshops called "Survival Workshops" in 11 cities across the United States between 1992 and 1994 with nearly 100 individuals living with chronic or life-threatening diseases such as cancer, AIDS, or cystic fibrosis. One of the movement exercises he used during these workshop was called "Drawing the life-line" during which, Jones asked them, "how could you conceptualize your life if you could draw it as a line, one smooth line?" while participants were given a sheet of paper upon which to draw. Participants were then invited to express their life experience through images, gestures and words, from birth, through the moment of diagnosis, to their imagined deaths (Tembeck, 2009) which took a form of a movement-based narrative. Jones' Still/Here and the survivor workshop was filled with embodied stories, and is an exemplary work of utilizing dance/movement experience as a narrative therapy.

2.3.3.3 Making meaning of pain thorough movement-based narrative. Scarry (1985) with the term "work" (p.169) describes individuals' urge to invent an "object" when in pain. She explains that individuals feel the intense yearning to create an object because pain is an intense perceptual event without concrete external object or referential content but "pain is itself

alone"(p.162). *Work* means the activity or labor of creation and the created object at the same time. Because the anguish of pain originates from its nature of objectlessness, creating an object can diminish the averseness of pain. She also states that through this movement from objectless toward external world, the extreme privacy and invisibility of pain becomes sharable and make the sentience social (Scarry, 1985). In DMT it is an essential component of therapy process to express individual's thoughts, feelings, or physical sensations and make meaning of their experience by creating symbols through movement expression. The metaphors or symbols they create through gesture or posing may be equivalent to what Scarry has called objects, and the process of expression and verbal processing of the meaning might be compared to the *work*. By externalizing their bodily experience of pain into a symbolic object, labeling it, and finding the meaning of it, one may be able to differentiate him of herself from the pain thereby feeling a sense of control over the pain.

Anthropologist Judith L. Hanna (2004) acknowledged the fact that telling stories and giving testimonies through the artistic form of dance, can help people to make sense of the incomprehensible, and transform the surreal into something real (Hanna, 2004). Through the means of dance and movement, individuals suffering from chronic pain may find a language to tell their story and thereby reconstruct their self world that has been un-made by pain. Moreover, narrative work can be reinforced by the relationship between the therapist and patient. Mattingly (1998) states that,

> Narrative not only functions as a form of talk; it also serves as an aesthetic and moral form underlying clinical action. That is, therapists and patients not only tell stories; sometimes they create story-like structures through their interactions. Furthermore, this effort at story-making, which I will refer to as therapeutic emplotment, is integral to the healing power of this practice. (p. 2)

By utilizing the interactive, constructive, and iterative nature of narrative work, a therapist can amplify the therapeutic effect of DMT in chronic pain patients.

2.3.4 DMT As a Resilience-Building Intervention for Chronic Pain Population

Throughout history, people have used dance to express emotion, tell stories, treat illnesses,

celebrate life and create social bonds. Dance activates the fundamental life energy and strength in people as its therapeutic factor is described as "investing people with the power to live . . . . and generating a reservoir of physical and psychic strength that can be used to further expression, communication and competence" (Schmais, 1985, p.25-26). This "invigorating and enlivening" power of dance (Erhardt et al., as cited in Goodill, 2006, p.53) has been a grounding force in DMT application in helping people to cope with various life challenges and obstacles such as mental illness, developmental challenges, psychological or physical trauma, and different medical diagnoses (ADTA, 2009).

As discussed earlier in this chapter, many resilience theories and models indicate that there are an array of resilience promotive/protective factors namely positive emotions, emotional stability, coping skills, social support, finding meaning, self-esteem, self-efficacy, reflective skills, hope, creativity, flexibility, humor, and spirituality and risk/vulnerability factors such as depression, social stress, poor coping skills, abuse, violence lack of social support (Carver, 1998; Kumpfer, 1999; Luthar & Cicchetti, 2000). It has been suggested that interventions aimed at increasing resilience should target these resilience promotive/protective factors and decrease risk/vulnerability factors (Luthar et al., 2000; Sturgeon & Zautra, 2010; Zautra et al., 2008). The fundamental premises of DMT and the evidence of its effectiveness in a variety of psychological outcomes indicate DMT's potential for cultivating important resilience-promotive/protective factors. Research and clinical evidence has indeed suggested that DMT can increase vigor (Cohen & Walco, 1999) and "positive quality of aliveness" (Chace, 1975, as cited in Goodill, 2006, p. 53), give expression to negative emotion and generate positive emotions (Brooks & Stark, 1989), enhance meaning making of one's experience and circumstances (Bullington, 2005), install hope (Thomson, 1997), improve self-esteem (Dibbel-Hope, 2000), enhance self-efficacy (Brauninger, 2000), increase coping skills (Loman, 1998), and facilitate social support (Ho, 2005), to list a few. Because of this, it can be hypothesized that DMT may offer unique treatment contributions to resilience-building in chronic pain patients.

However, despite its apparent relevance to the needs of chronic pain population and applicability in resilience-building, DMT has yet to become a widespread form of treatment for chronic pain. To my knowledge, no research exists that has systemically examined resilience as an outcome of clinical DMT intervention for chronic pain population. In addition, while few studies on pain have reported positive effects of DMT on outcomes such as pain intensity, body image, and stress and mood, the specific therapeutic factors and mechanisms that explain the effects of DMT on chronic pain are unknown. Therefore, research that examines how DMT might address the complexity of the chronic pain experience and provide a comprehensive theoretical framework or model to support the use of DMT for resilience in people with chronic pain is needed at this time.

2.3.5 Rationale for the Study

The literature and clinical evidence demonstrated the appropriateness and potential benefit of DMT for the chronic pain population. One of the positive health concepts that have been proposed as vital in chronic pain management is psychological *resilience*, a dynamic process of positive adaptation in the context of significant adversity; it is suggested that mind-body psychotherapeutic interventions may be useful in building resilience. Even though DMT for resilience-building in people with chronic pain population has yet to be studied directly, the fundamental principles and clinical findings of DMT's effectiveness in previous pain studies or with other medical populations provide a sound rationale for its potential in fostering the resilience promotive factors and resilience outcomes.

In addition, while previous DMT studies have reported positive effects on some of the pain outcomes, the therapeutic process and mechanisms that explain the effects are unknown. There is an urgent need for developing theories and models that explicate DMT's therapeutic mechanisms in the DMT field in general. Research that examines how DMT might address the complexity of the chronic pain experience and provide a comprehensive theoretical framework or model to support the use of DMT for resilience-building in people with chronic pain is needed at

this time. I propose that a mind-body intervention such as DMT might play a unique role in enhancing resilience in people with chronic pain. In contrast to existing models of resilience, DMT may facilitate the promotive factors and moderate the risk factors in building resilience through utilizing the powerful mechanism of integrative and collaborative relationship between mind, body and environment. Therefore, this study will generate a model/theory of DMT to enhance resilience in chronic pain patients using a mixed methods grounded theory design.

CHAPTER 3: METHODS

3.1 Paradigmatic Stance of the Researcher

To answer the study's overall research question "What clinical model grounded in quantitative and qualitative data can explain the therapeutic mechanisms of dance/movement therapy for resilience building in chronic pain patients?" a sequential exploratory-confirmatory mixed methods grounded theory design was developed.

It is recommended by several experts that researchers who use mixed methods be explicit about their paradigms (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Greene & Caracelli, 1997; Johnson, McGowan, & Turner, 2010a). A research paradigm (also referred to as *worldview*) is " a set of beliefs [ontological, epistemological, axiological, aesthetic, and methodological], values, and assumptions that a community of researchers has in common regarding the nature and conduct of research" (Johnson, Onwuegbuzie, & Turner, 2007, p. 24). Even though research paradigms and particular methods are not necessarily linked together, paradigms may not only lead to, but also be influenced by, research methods as Johnson, McGowan and Turner (2010) described the influence as being "bidirectional or circular or mutual" (p. 65).

I share a pragmatic philosophical view in which one focuses on asking fundamental questions about doing research, such as why one does the research, whom the research is for, or what the research can actually do to bring about practical changes. Within a pragmatic paradigm, researchers decide the best fitting methodology to answer their research questions rather than holding tenaciously to a philosophical commitment, certain paradigmatic stance or methodology itself (Tashakkori & Teddlie, 1998, 2003).

Pragmatism has been identified as the best fitting paradigm for mixed methods research by several researchers (Creswell & Plano-Clark, 2011; Patton, 2001; Tashakkori & Teddlie, 1998, 2003). Some of the key values and concerns of pragmatism, such as positive effects or

consequences; dynamic meanings of a phenomenon; both theory and practice; and thinking and acting at the same time (Nodding, 2005) justify the use of both quantitative and qualitative methods. Generally, quantitative methods are utilized by post-positivists whereas constructivists utilize qualitative methods. While different positions in the long-running debate between post-positivists and constructivists have been portrayed as a "paradigm war", mixed methods research allows for the productive rapprochement of the paradigms, as one can hold multiple paradigms in it (Creswell et al., 2003); this allows for the expansion of research in social and behavioral science fields.

I believed that utilizing mixed methods based on the key values of the pragmatic worldview would best suit the purpose of this research and the characteristics of the particular participants. People with chronic pain often feel misunderstood, judged, or vulnerable which may result in the experience of being socially isolated, stigmatized, or feeling marginalized (Jackson, 2005). A lot of these issues are related to the nature of pain's invisibility and inexpressibility, which make pain-related factors difficult to quantify. Therefore, I decided to utilize not only numerical data but also various qualitative data sources such as verbal data (in-depth interview scripts) and nonverbal data (symbolic and/or expressive movements from video recordings to enable the participants to identify and communicate their subjective experience more effectively. Using both qualitative and quantitative methods allowed me to obtain a fuller picture of the participants' experience of living with chronic pain as well as to facilitate identification and testing of the therapeutic mechanisms of DMT for resilience building in chronic pain patients.

In addition, another tenet of pragmatism is that "knowledge is created through the way people act and interact together" (O'Callaghan, 2012, p. 238). Since grounded theory is fundamentally influenced by symbolic interactionism (Blumer 1969), and it is a method of inquiry characterized by its iterative process following the principle of constant comparison, it is considered to be a type of inquiry that is valuable to the pragmatist view as well.

3.2 Design

3.2.1 The Journey Towards a Design Decision

This study utilized a *Sequential Exploratory-Confirmatory Mixed Methods Grounded Theory* design in which qualitative and quantitative data were collected and analyzed both sequentially and concurrently throughout three phases within the overall grounded theory process. This design was aimed at developing a clinical model of DMT for resilience building in people with chronic pain. In what follows is a description of my journey towards the identification of this innovative research design.

3.2.2 Grounded theory

3.2.2.1 Why grounded theory? Both the recognition of the need for and effort to conduct methodologically robust research to test theories and attest to the clinical effect of DMT practice have been increasing in the field of DMT. Although there has been a growing body of research that demonstrates the effect of DMT on target behaviors or symptoms in various populations, little study has been done to identify the actual mechanism of "how" DMT works in engendering the therapeutic changes and the core factors that have contributed in generating positive outcomes for particular people with specific diagnoses or issues. Instead, the process of healing is often viewed as a "mysterious" phenomenon that takes place in the course of DMT practice. This has resulted in a lack of language or "theory" that explains this healing process.

This lack of DMT theories is an important barrier to the field's ability to establish its legitimacy in the mainstream social or health science fields. It furthermore hampers communication and interdisciplinary collaboration with scholars and researchers from adjacent fields. Most importantly, grounding DMT interventions in theoretical frameworks and enhanced understanding of treatment mechanism will help to bring the best possible services to our clients. Furthermore, one would hope that the training of dance/movement therapists is based on sound theoretical knowledge. Therefore, I believed that theory-generating as well as model-

confirmatory research was much needed so that therapeutic mechanisms and healing factors of DMT could be identified and clearly articulated.

3.2.2.2 What is grounded theory? Grounded theory (GT) is generally defined as a "methodology that employs a systematic set of procedures to inductively develop theory that is "grounded" in the data from which it was derived" (Barnett, 2012, Methodology section, para. 1) GT was first pioneered by two sociology researchers, Barney Glaser and Anselm Strauss, during their collaborative studies with dying patients in hospitals in 1965 (Charmaz, 2006). Glaser and Strauss felt that existing theories used in research were often inappropriate and ill suited for participants under study (Creswell, 2007). They believed that systematic qualitative analysis had its own logic and could generate theory "grounded" in data from the field (Charmaz, 2006). During the data analysis process of their study on dying, they developed systematic methodological strategies that could be adopted in many other social science studies. In their co-authored book, "The Discovery of Grounded Theory" (1967), they first articulated these strategies and advocated for developing theories from research grounded in data rather than deducting testable hypotheses from existing theories. Thus, instead of formulating hypotheses or predetermining what is important to investigate, the researcher uses "a process of discovery to explore important themes and issues as they emerged during the grounded theory research process. The research outcome is also called grounded theory"(O'Callaghan, 2012, p. 237).

The aim of the grounded theory method is not to find the "truth" but to conceptualize what is going on through empirical research (Glaser & Strauss, 1967). The grounded theory researcher begins a study by focusing on a social phenomenon, gathers data in the field from a variety of sources such as interview transcripts or observational notes, analyzes data using a number of levels of coding and theoretical sampling procedures, and lets the theory of the phenomenon emerge or emanate from the data (Amir, 2005; Charmaz, 2000).

While different versions of grounded theory exist due to the divergent views the grounded theorists hold (e.g., the degree of structure guiding grounded theory research, the use of

literature, or epistemological perspectives), there are some key features that most grounded theory scholars agree on (Johnson et al., 2010a). Those characteristics include the use of some form of systematic analysis, an iterative study process, theoretical sampling, constant comparative coding procedure, the identification of a core variable, and theoretical saturation (Creswell, 2002; Johnson et al., 2010a; Lingard, Albert, & Levinson, 2008).

Most commonly used grounded theory analysis employs three main tiers of coding: open coding (identifying categories, properties and dimensions), axial coding (examine conditions, strategies and consequences), and selective coding (integrating and refining categories) (Strauss & Corbin, 1998). There is flexibility in the movement between tiers (Rice & Ezzy, 1999) and by gradually identifying and refining the relationship between emerging elements the researcher constitutes a theory.

3.2.3 Mixed Methods

3.2.3.1 Why mixed methods? Mixed methods involves using both quantitative and qualitative research, meaning a mixed methods researcher deals with information that is presented in both narrative and numerical forms and analyzes the different types of data by using statistical and thematic data analytic techniques (Rice & Ezzy, 1999). A mixed methods approach was considered to be most appropriate for this study for the following reasons. First, the phenomena being investigated (i.e. chronic pain experience and resilience) are complex. Chronic pain is a multi-faceted condition. Psychological resilience is also a concept that has many dimensions-biological, cognitive, affective, behavioral, social, ethnic and cultural dimensions (Teddlie & Tashakkori, 2009). Such complex phenomena in social science cannot be fully understood by using either purely qualitative or purely quantitative methods, and requires different kinds of methods that provide divergent point of views in picturing the phenomenon (A. J. Zautra et al., 2010). Second, as Teddlie and Tashakkori (2003) suggest, the major advantage of mixed methods research is that it allows simultaneously verifying and generating a theory in the study. Finally,

when the results from two different methods converge, the inferences made by this study can be stronger.

3.2.3.2 What is Mixed Methods research? Mixed methods (MM) research, referred to as the "third research paradigm" (Tashakkori & Teddlie, 2003), has "gained its popularity in the social science field after the era of first quantitative, and then qualitative research" (Johnson & Onwuegbuzie, 2004, p. 15).

There have been different understandings about MM research depending on what is being mixed, which stage of the research process the mixing happens, the latitude of the mixing, the purpose or rationale of the mixing, and the elements driving the research (Creswell & Plano Clark, 2011). Several definitions have emerged and evolved over the past two decades (Creswell & Plano Clark, 2001). Johnson, Onwuegbuzie and Turner (Johnson et al., 2007) provided the following general definition based on their analysis of 19 definitions proposed by leading MM research methodologists:

> Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. (p. 123)

However mixed methods research is not only a methods of inquiry, but also a philosophical orientation (2007). According to Greene (2007), MM is about having "multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished" (p.20). This definition allows for incorporation of diverse stances and broader applications.

MM design is used 1) because one data source may be insufficient, 2) to explain initial results, 3) to generalize exploratory findings, 4) to enhance a study with a second method, 5) to best employ a theoretical stance, or 6) to understand a research objective through multiple research phases(Greene, 2007) (p. 20). The greatest strength and advantage of mixed methods is

that one method can counterbalance or neutralize the weakness of the other methods (Creswell & Plano Clark, 2011). For example, quantitative research has strength in providing legitimacy and generalizable findings yet has been criticized as lacking in understanding the context of data and conveying the voice of the people who are being studied directly, as well as being deficient in identifying the personal biases and viewpoints of the researcher. On the other hand, qualitative research has value in finding contextualized information and delivering the voice of the participants directly. However, a major weakness of qualitative methods is that it is easy for the research to be tainted by the researcher's own interpretation and biases.

Although "the actual diversity in mixed methods studies is far greater than any typology can adequately encompass", as Maxell and Loomis (2003) observed (as cited by Greene, 2007, p. 116), there have been efforts to develop useful criteria/typologies that may be considered in designing MM studies. These typologies include (1) number of methodological approaches (e.g., monomethods vs. mixed methods), (2) number of strands or phases (e.g., monostrand vs. multistrand), (3) type of implementation (e.g., parallel, sequential, conversion, multilevel, and combination), (4) the priority (also referred to as *status* or *weight*) given to quantitative or qualitative research (e.g., quantitative dominant vs. qualitative dominant), (5) the stage in the research process at which the integration takes place (e.g., experiential stage only vs. across all stages), (6) functions of the research study (e.g., triangulation, complementary, development, initiation, and expansion), and (7) theoretical perspective or philosophical paradigm that drives the research (e.g., pragmatism, transformative-emancipatory, etc.) (Creswell & Plano Clark, 2011).

3.2.4 Mixed Methods Grounded Theory (MM-GT)

3.2.4.1 Searching for a new research design. I felt that the emergent and interactive nature of the grounded theory method would best serve the purpose of constructing a DMT model that accurately reflects the dynamic process of resilience-building in chronic pain patients. Also, I

assumed that to best understand the complex mechanism of resilience building, the process has to be investigated both qualitatively and quantitatively.

However, traditionally grounded theory has been housed in the qualitative research domain and used exclusively to collect and analyze qualitative data. Therefore, I started exploring the possibility of conducting grounded theory research using both qualitative and quantitative data collection and analysis. I discovered that although grounded theory is generally seen as a qualitative research method, the founders of grounded theory, Glaser and Strauss (1967), actually viewed it as a whole method that can work well with both qualitative and quantitative data and techniques (Creswell & Plano Clark, 2011; Greene, 2007; Teddlie & Tashakkori, 2009). They, in fact, stated that "in many instances, both forms of data are necessary"' (Glaser & Strauss 1967, p.17).

It is argued that grounded theory approach has common features with a positivistic approach as its interest is in the discovery of regularities (Tesch, 1990), yet it is also an interpretative type of research that cares about reflection and elaboration of meaning (Amir, 2006). In addition, the epistemology of classical grounded theory appears to be connected to pragmatism, as it emphasizes the empirical findings grounded in data rather than imposing what is important to look at; this makes it compatible with the pragmatic world view of mixed methods research.

Critical confirmation was attained from an article written by Johnson, McGowan and Turner (2010) entitled, "Grounded theory in practice: is it inherently a mixed method?" In this article, Johnson and colleagues state that classical grounded theory has many features in common with mixed methods research and explain how classical grounded theory might be transformed into a distinctive mixed methods grounded theory research method. They used the label *MM-GT* (i.e., mixed method grounded theory), and claimed that grounded theory is not only a research method that "fits remarkably well with mixed methods research . . . . [but also] an important method for mixed methods research . . . . that can help advance social, behavioral, and

educational research" (p.65, 75). They furthermore argued that the researcher should be asking deeper and complex questions like "what works, for whom, in what contexts, how does it work, and how can it continually adjust to changing conditions and be improved?"(p. 72). MM-GT is a research approach that can provide answers to these questions and enhance understanding of the richness and complexity of the human world.

According to Johnson et al. (2010), MM-GT is especially effective in achieving the following characteristics that contribute to scientific research:

1) Link explanatory research to relevant theories through theory generation, theory testing, and ongoing theory modification.
2) Produce nomothetic (i.e., general) knowledge and idiographic (i.e., particularistic and contextual) knowledge, and interconnect these to produce meaningful description and practical theory.
3) Document multiple types, levels, forms, and degrees of causation (e.g., statistical and experimental, nomothetic and idiographic causation, descriptive and explanatory causation).
4) Replicate, translate, transfer, and document mediating and moderating processes, delineate conditions of generalization, and identify broad generalizations when possible, and identify complex contextual, cultural, and ecological interactions to aid in particular understanding and practical application of education/social theory.
5) Articulate, explicate, develop, and test manualized models, practice-based models, middle-level theoretical models, meta-models and trans-theoretical and transdisciplinary models of educational phenomena, and interconnect these continually for scientific learning.

In summary, MM-GT, when done with the perspective of equals-status mixed methods research, allows for a more balanced and comprehensive approach in scientific research. Therefore, it was decided that MM-GT would best meet the objective of this study - theory generation and theory testing - and enable building a meta-model that is grounded in a various forms of data.

3.2.5 A Sequential Exploratory-Confirmative Mixed Methods Grounded Theory

3.2.5.1 Developing an innovative research design. Johnson et al. (2010) introduced some of the grounded theory studies that had utilized mixed methods in one-way or another. Nevertheless, the authors identified that there had been no existing MM-GT research that had used qualitative and quantitative method in equal status, meaning there is no existing design framework that I could employ for my research. Subsequentially, I carefully reviewed mixed methods research designs that had been categorized by several mixed methods experts. However, none of the existing designs seemed to be a good fit for my research question. As I was struggling to make my study to fit into one of the existing study designs, Dr. Burke Johnson provided me with an eye-opening perspective and suggestion during a consultation session. His advice was to "not to try to pick what is already written in the menu, but to create a new recipe that is unique and is best fitting to your study" (personal communication, September 7, 2012). Tashakkori and Teddlie (2009), in their discussion about the seven-step process for selecting an appropriate mixed methods design, also emphasize that,

> You want to select the best available MM research design for your study, but you realize that you may have to eventually generate your own . . . . You may have to combine existing designs . . . . or develop a new MM design, using flexibility and creativity because no one best design exists for your research project, either when it starts or as it evolves (p. 163-164).

Inspired and empowered by the new perspective and with the consultation and guidance from the MM-GT research expert Dr. Johnson, I developed a new MM-GT design based on existing MM frameworks, in which both an exploratory and confirmatory intent, both qualitative and quantitative data collection operation, and both qualitative and statistical analysis and inference are combined (Johnson et al., 2010) .

Various design factors were considered during the development of this new design. According to Greene (2007),

> The design of a mixed methods study follows directly from the identified purpose for mixing, because different purposes call for different *mixes* of methods, different

> *priorities* or weights allocated to the different methods, different *interactions* among the methods during the course of the study, and different *sequences* of implementation (p. 112).

Based on these principles, Greene (2007) proposed several design options to consider when a researcher is constructing his or her own design. She suggested seven design dimensions, namely paradigms, phenomena, methods, status, implementation: independence, implementation: timing, and study. Besides Greene's seven dimensions, additional important design typologies have been proposed by other MM thinkers, including "*number of strands or phases" (*Teddlie & Tashakkori, 2006). The table below displays the list of the design dimensions as proposed by Green and Teddlie & Tashakkori, with their definition and their application to this study.

Table 1. Design dimensions of the study

Dimension	**What it concerns**	**The dimension used in this study**
Paradigms	"The degree to which the different method types are implemented within the same or different paradigms" (p.118)	The whole set of methods is designed and implemented with the same paradigmatic framework: pragmatism.
Phenomena	The degree to which the qual and quan methods are intended to assess totally different or exactly same phenomenon	Quantitative and qualitative methods in this study are assessing the same phenomenon - building a DMT model of resilience- using *Integrated* design with a purpose of *Iteration.*
Methods	The degree to which the qual and quan methods are similar to or different from one another in form, assumptions, strength, and limitations or biases	The study uses two different methods, qual and quan, but with an assumption that each method has its unique strengths thereby compensating the limitation or weakness of the other method.
Status	The relative weight - or *dominance* in Creswell's (2011) typology - and influence of the qual and quan methods in regard to their frequency and centrality to study objectives	More weight on qual in regard to the frequency yet equal weight and importance in regard to the centrality
Implementation	The degree to which the	The implementation of qual and quan

-Independence	implementation of qual and quan methods are done interactively or independently	methods is intentionally interactive during the course of the study.
Implementation - Timing	Whether the different methods are implemented concurrently or sequentially	Sequential as a whole yet includes a partial concurrent phase
Study	Whether the mixing takes place in one study or across a set of studies	Mixing occurs across a set of studies
Number of strands or phases	Whether the study involves one phase or multiple phases –Mono strand/multistrand	Multiple strands - qual + quan Multiple phases – three phases

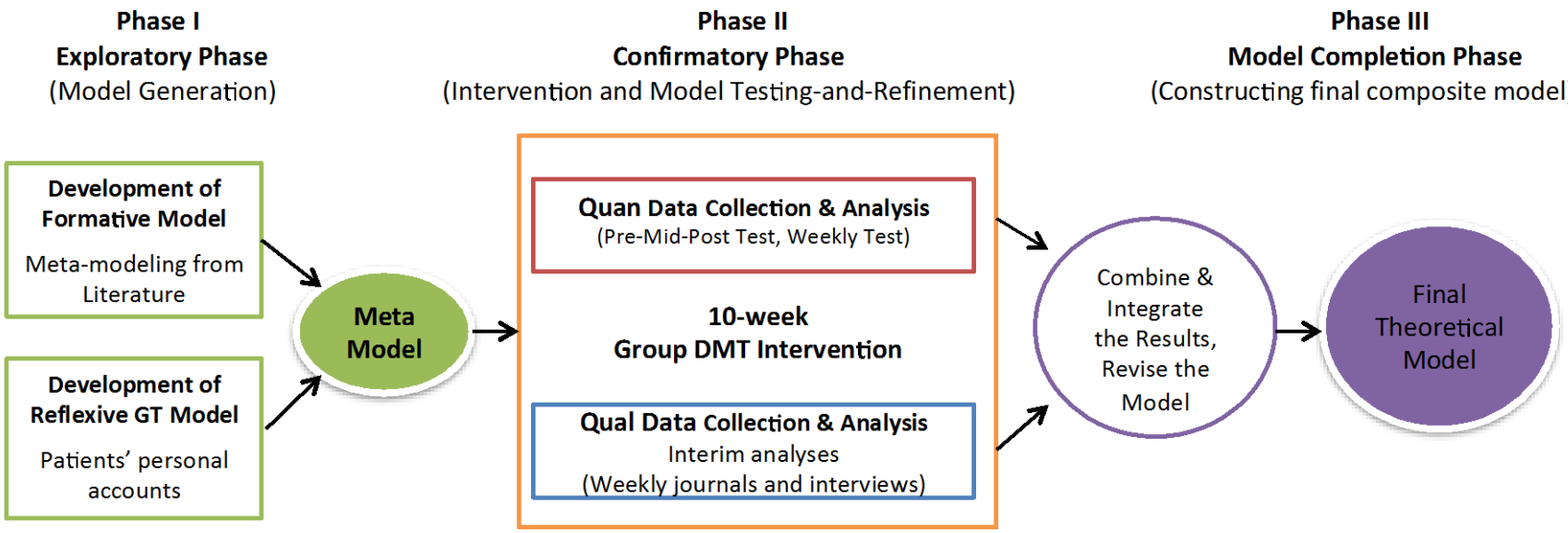
3.2.5.2 Developing the design. Based on the pragmatic paradigm, multiple data sources and data collection/analysis techniques were employed in order to ask *how* and *why* the phenomenon of resilience building through DMT intervention operates (Greene, 2007). Namely the literature, clinical observation and experience, numeric scores from standardized instruments, verbal data from interviews, and nonverbal data from video recordings. In this study, grounded theory was construed as an approach, rather than a method (Johnson, McGowan, & Turner, 2010b) as several methods such as meta-modeling from literature and clinical observation, interviews, clinical experiment, quantitative measurement, and visual analysis were employed and inter-woven together into the overall methodological design in order to "bring about a balance of theory generation and theory testing" (Gasson, 2003).

A sequential structure with three phases was employed since the overall process of model generation and testing would take place consecutively. Each phase informed the next phase, contributing to build up towards the final model construction. The three phases were: 1) exploratory phase: model generation, 2) confirmatory phase: intervention and model testing and refinement, and 3) model completion phase. Below is a brief overview of each phase.

Phase I. I began with a broad concept and seek to gain a deeper understanding of the topic by looking at common themes to generate a formative model from theory grounded in the data. Thus the first phase was "exploratory" in nature. During the first phase, a substantive grounded theory was developed from two qualitative data sources and analysis processes, a) building a formative DMT model of resilience based on existing literature; and b) conducting a reflexive grounded theory of resilience from interviewing patients with chronic pain.

Phase II. Informed by the substantive theory identified in the phase I, a 10-week DMT intervention was conducted during which the therapeutic mechanisms of DMT for resilience identified in the preliminary model from phase I were tested quantitatively and qualitatively, hence serving as a "confirmatory" stage.

Phase III. The results from the two strands were compared and integrated. Grounded on the results from the second phase, the substantive model from the first phase was reviewed and refined, and the final composite model of DMT for resilience was constructed. Reflecting the purpose and function of each of the three phases, the overall design was therefore named "a sequential exploratory-confirmatory mixed methods grounded theory". The following diagram and table give an overview of the research design and procedure.



Data	Formative model: literature Reflexive GT: Interview scripts	Quan: Numerical scores from the questionnaires (weekly test, BL, mid and post tests) Qual: interview scripts, journal writings, video recordings	Quan: Numerical scores of the questionnaires Qual: Text data, Image data	Phase I model Phase II model
Procedure	Formative model: develop a model based on the literature Reflexive GT: Conduct interviews and analyze the data according to GT method	A 10-week DMT intervention Quan: Survey with standardized instruments, weekly test Qual: - Video record DMT sessions - Weekly journals - Semi-structured interviews	Quan - Descriptive statistic analysis - Correlation analyses Qual - GT analysis - Memoing Interpreting & merging quan and qual results	Combine & integrate the findings from the two phases Revise & refine the initial model to construct a final composite model
Product	Initial Meta model/Substantive grounded theory	Numeric data Text data, Image data	Correlation factors Codes, categories, core category	Final meta/composite model

Figure 2. Design diagram

3.2.5.3 Roles of the Researcher

In all research endeavors, it is important for researchers to be aware of their roles in their research studies. This is particularly important when conducting a grounded theory study since the researcher him/herself is used as an instrument in building a theory (Creswell, 2011). In their discussions of the researcher's role as an insider versus outsider, Maykut and Morehouse (1994) argued that the researcher's roles and perspectives can be paradoxical since "it is to be acutely tuned-in to the experiences and meaning systems of others—to indwell—and at the same time to be aware of how one's own biases and preconceptions may be influencing what one is trying to understand" (p. 123). The notion of the dichotomy of insider versus outsider status of the researcher, however, has been challenged, since the dualistic conceptualization of the role of researcher is viewed as overly simplistic and often it is hard to fully understand whether one is inside or outside or somewhere in between (Acker, 2000). Dwyer and Buckle (2009) also contended, "holding membership in a group does not denote complete sameness within that group; likewise, not being a member of a group does not denote complete difference." (p. 60) Based on this notion, Acker (2000) suggested that one should find a way to work creatively and in fact, attempt to find a way to be both an insider and an outsider. Kanuah (2000) proposed the hyphen of "insider-outsider", and argued that this paradoxical and ambiguous third space should be a "path and dwelling place" for researchers (as cited in Dwyer & Buckle, 2009, p.60). According to Dwyer and Buckle, what allows researchers to be 'insider-outsider' is being aware of the way in which we are different from others, while at the same time being aware of the ways in which we are similar.

In this research study, my standpoint in terms of membership was located in the very ambiguous and ambivalent place of the 'space between' (Dwyer & Buckle, 2009). I have experienced living with chronic pain myself. In addition, I have worked with people with chronic pain both as a clinician and a research team member prior to this study. Therefore, I came to this study with a substantial level of knowledge and experience in the topic as an insider. However, in this

study I was a researcher who aspired to implement classical grounded theory principles, which emphasizes the inductiveness of the theory building process and researcher's role as an outsider. What made the situation even trickier was the multiple roles I had to play throughout the study process. I not only administered all quantitative measurement sessions, conducted qualitative interviews, and analyzed the study data, but also was the clinician who employed the DMT intervention. Hence, I was faced with an inherent tension of conducting research "within the cultural context of one's own people" (Kanuha, 2000, p. 444) while seeking to maintain a role as an outsider, and playing an insider-outsider role fairly seemed to be a very challenging task.

To find a balance in this 'space between' and successfully carry out a legitimate grounded theory study, I first acknowledged that complete neutrality is impossible (Rose, 1985). It was helpful to understand that,

> researcher bias… is just another variable and a social product. If the researcher is exerting bias, then this is a part of the research, in which bias is a vital variable to weave into the constant comparative analysis. (Glaser, 2002, para. 12)

With an understanding that the reality we study as well as our position as researchers are in fact ambiguous and complicated, I realized that to be in command of what I am doing, I needed to appreciate and be aware of my own bias as a variable and try my best to understand the multilayered complexity of its role in the research process. I understood that in order for me to become a self-aware insider-outsider, constant self-reflection to be conscious of my own personal biases and perspective and practicing fluidity to balance on the spectrum of insider-outsider role would be critical. To this end, I utilized three techniques, namely, theoretical memos, self-interview and artistic exploration. I wrote memos about my interpretation and understanding of the data as well as any hypothesis and theoretical concepts as they emerged. I asked myself interview questions from the very beginning as a way of identifying my perspectives and bracketing. I used visual and movement-based artistic exploration of the themes, categories and my emotional responses to the data in order to gain awareness and insight.

Since I had learned from the phase I data that the issue of stigma, validation and acceptance could be critical factors in building relationships for people with chronic pain, I decided to disclose my position as an insider to the study participants. I also shared my own movement-based narrative with them after the participants performed theirs. It appeared that my membership role was perceived as positive to the participants as well as positively influenced the therapeutic process of the participants. Some participants expressed that knowing that I was "one of them" helped them to ease their fear of being judged and allowed them to feel comfortable to unveil their own vulnerability. One person said that it helped her to perceive the therapist role and position not as an authoritative leader but an empathetic facilitator. Another participant compared this effect to the process of rehabilitation of people with addiction. She said that having a therapist who has a first-hand experience of what they are going through can have a positive impact on the therapeutic experience. There were positive aspects of being an insider-outsider in my part as well. I recognized that a lot of data the participants were reporting were not unfamiliar to me and that this evoked personal memories, strong emotional responses or identification with the participants at times. I also recognized that the breadth and depth of understanding and knowledge I had about these data might not be easily accessible to "outside people"; this made me feel that I was in a privileged position to analyze these data.

However, to practice a rigorous insider-outsider role I used memos to ensure that data was grounded on participants' journals and session discussion content so that any inappropriately presumed relevancies could be corrected for through constant comparison. What I tried to do was to respect grounded theory as a perspective methodology (Glaser, 2002), meaning instead of exploring data with an interpretive approach, I tried to raise participant data to a conceptual level and conceptualize the observed patterns through constant comparison.

CHAPTER 4: PHASE I - EXPLORATORY PHASE: MODEL GENERATION

4.1 Objective of the Phase

The objective of phase I was to generate an initial model of DMT for resilience building in people with chronic pain. To this end, two separate sets of qualitative data collection and analysis processes were conducted: 1) development of a formative model based on the literature and 2) development of a reflexive grounded theory model based on interviews. The two studies were carried out concurrently yet independently. Then, the results from each study were combined and integrated to generate a meta-model.

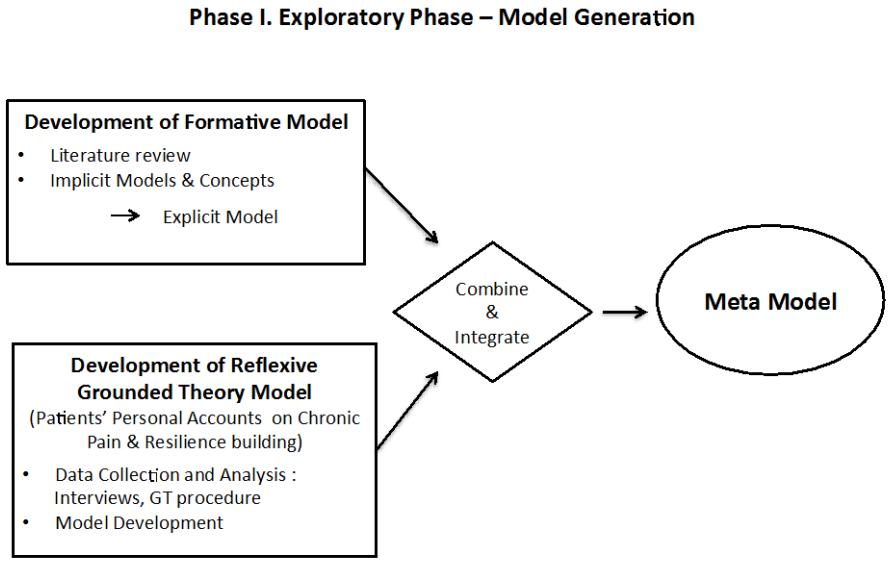


Figure 3. Phase I design diagram

4.2 Development of the Formative Model – Literature-Based Model

4.2.1 Objective

The objective of this part of Phase I was to develop a formative model that depicts key therapeutic factors and process of DMT for building resilience in people with chronic pain based on

concepts and ideas identified from existing literature on the use of DMT with people with chronic pain.

4.2.2 Overview of the Method

A formative DMT model of resilience building for chronic pain patients was developed through a *meta-modeling* process. *Meta-modeling* is a term coined by R. Burke Johnson (Johnson et al., 2010a) that refers to the process of "developing models from other models" (p. 94). According to Johnson (1998), *meta-modeling* is "an inductive theory-building approach" using a specific data source, existing theories of models (p. 94). Except for the difference in data sources in grounded theory and meta-modeling (i.e., grounded theory being directly based on original qualitative data vs. meta-modeling being based on existing models generated from empirical data), grounded theory and meta-modeling share a similar approach as they both "inductively search for categories, describe their properties and dimensions, and order the categories" (p. 95).

Researchers may build a meta-model from two types of models. *Implicit process-models* are constructed by researchers based on the ideas and concepts they gather while reviewing the existing literature on a targeted phenomenon. *Explicit process-models* are the models already constructed and presented in the literature. In addition to the systems of concepts, categories, and variables from these two types of models, researchers may integrate findings that might not be available in the existing literature, to build a new, holistic meta-model. It is also important to understand that throughout the meta-modeling process, the researcher continues to go back to the literature to reflect and examine the evolving model and refine it by adding or deleting certain variables (Johnson, 1998).

Since there was no existing explicit DMT model for resilience building in people with chronic pain to my knowledge, implicit models were drawn from literature (i.e., published DMT research studies on chronic pain). The variables identified from the literature were integrated and interwoven to construct a conceptual model.

4.2.3 Data Collection and Analysis

A formative model was developed using an iterative approach of reviewing the literature, constructing a model, going back to literature, making changes, and determining on model fit, thus data collection and analysis took place simultaneously (Johnson, 1998). The search of the literature was limited to published DMT research studies on chronic pain management. I searched electronic databases and trials registers including MEDLINE, CINAHL, PSYCINFO, Proquest Digital Dissertations, and ClinicalTrials.gov. Selected studies were reviewed to identify key characteristics or concepts in DMT for people with chronic pain. Based on the variables identified from each study, visual models that depict the central concepts were drawn. The visual representations were solely based on my interpretation of the concepts. I did not seek feedback from the researchers. Therefore the presented implicit models may not represent the comprehensive ideas of the original researchers.

Key themes were identified from the implicit models. Through a process of comparison of the identified variables and conceptualization of the relationships between the variables, visual models that depict the variables and their causal relationships were drawn in order to construct a conceptual model, that is the formative model. During this process, my previous knowledge on the topic based on clinical experience was used to constantly compare to the emerging findings from the literature, and integrated into the model building process. The overall course of formative model development was a creative process of combining the implicit process models and turning them into an explicit model.

4.2.4 Findings

4.2.4.1 DMT implicit models. Four implicit models of DMT for chronic pain were identified from the literature. They varied in terms of the types of research methodology and interventions. Table 2 demonstrates the characteristics of the selected studies. Brief descriptions of the model and visual display for each implicit model will be presented.

Table 2. Background of the DMT implicit models

Authors	Year	Type of study	Population	Treatment duration	Type of intervention
Bojner-Horwitz, E., Theorell, T., & Anderberg, U. M	2003	Randomized Controlled Trial	36 females with Fibromyalgia Mean age = 57 yrs	6 months (1 hr/wk)	Group therapy
Bullington, J., Nordemar, R., Nordemar, K., & Sjöström-Flanagan, C.	2003	Qualitative study (Focus group interviews)	3 therapists working with chronic pain patients Mean age not specified	Not specified	Group and Individual therapy
Bullington, J., Sjöström-Flanagan, C., Nordemar, R. &, Nordemar, K.	2005	Qualitative study (Case study)	A female patients with muscular skeletal pain Age = 30 yrs	Not specified	Group and Individual therapy
Sjöström-Flanagan, C.	2004	Qualitative study	61 people with various chronic pain conditions (97% females, 3% males) Mean age= 45yrs	9 weeks (2hrs/wk)	Group therapy

4.2.4.1.1 Bullington et al. model A. The first implicit model was identified based on the findings from a qualitative study by Bullington, Sjöström –Flanagan, Nordemar, and Nordemar (2003). Bullington and colleagues contended that the key concept that represents the therapeutic process of DMT for people with chronic pain is achieving a sense of 'order out of chaos'. Living with chronic pain is described as being in a chaotic and disintegrated state; the successful process of healing is recognized as achieving a sense of control, sense of wholeness and identity renewal by developing a new personal meaning ('meaning evolution'). There are two main mechanisms that support this process, namely, 'integration' and 'loosening'. Integration has to do with linking one's mind, body, and emotion as well as one's self in the past and future. Loosening on the other hand, has to do with loosening the mental and physical rigidity and moving toward to achieve flexibility and creativity. The model diagram is presented in figure 4.

4.1.4.1.2 Bullington et al. model B. In their publication in 2005, Bullington and colleagues presented two case studies, one of which described a therapeutic process of DMT with a patient with

chronic pain. In this publication they identified some additional factors and aspects in the therapeutic process. The overall therapeutic process was still viewed as a 'ordering chaos' in which the clients find structure through gaining awareness of the fragmented pieces of their experience (i.e., thought/feelings/memories), achieve integration by making meaningful connections, and move toward discovering a new meaning and sense of coherence. They underlined 'meta-perspective' as an important aspect of this process. Meta-perspective refers to the ability for an individual to separate oneself from the pain and see self, pain, and current circumstances from an objective point of view. This process was identified as a process of articulation. They identified that there are two types of chaos – one referring to the pathological state of disintegration, and one referring to the overwhelming sense of disturbance a client may experience as a part of the therapeutic process at the beginning stage of the therapy. The therapeutic relationship was suggested to be an important element that can provide structure and support throughout the therapy process. The implicit model is illustrated in figure 5.

4.2.4.1.3 Bojner-Horwitz's model. A simple implicit model was depicted based on the findings from a randomized controlled trial study on fibromyalgia patients by Bojner-Horwitz, Theorell, & Anderberg (2003). This study was aimed at examining DMT's effect on change in stress related hormones - prolactin, dehydroepiandrosteronsulphate, cortisol, and neuropeptide Y. The results on the stress hormones were not statistically significant. However another component of the study (i.e. patients' self-interpretation of the video) provided some meaningful findings. The results showed that DMT helped improving the level of self-perception on mobility, life energy and movement pain and body image in women with fibromyalgia. They contended that this changes which might be related to the pain reduction and increased sense of well-being. Two DMT factors that contributed to this process were identified, namely body awareness and expressive movement. Figure 6 demonstrates the model.

4.2.4.1.4 Sjöström-Flanagan model. Sjöström-Flanagan's work (2004) suggests the importance of using different forms of metaphors in the DMT process with people with chronic pain.

The healing process of individuals can be shown in the pattern of meaning evolution and the characteristics of movement metaphors emerging throughout the course of therapy. Sjöström-Flanagan's implicit model shows that specific metaphors might support individuals to get in touch with their body which, in turn, brings heightened awareness on their body, feelings and behavior; this then allows them to be open to new ways of coping and relating in life. As individuals increase access to ego functions (i.e., thinking, feeling, sensing and intuiting about the situations) they feel more in charge of their lives. Figure 7 displays the implicit model.

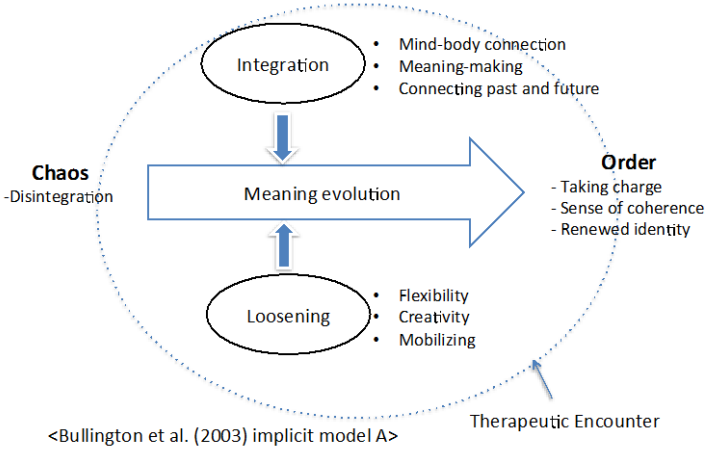


Figure 4. Bullington et al. Implicit model A

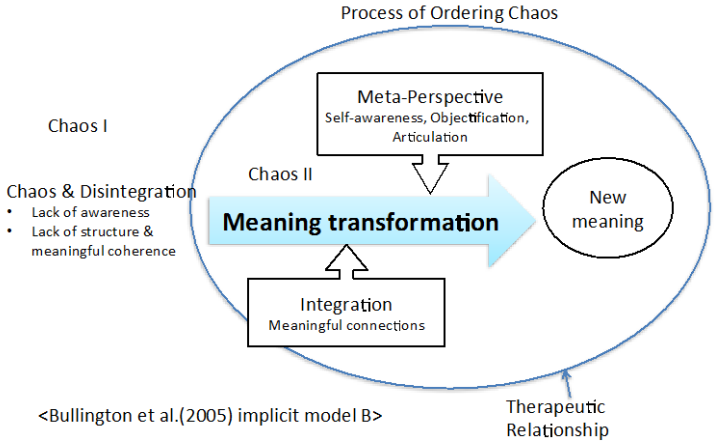


Figure 5. Bullington et al. Implicit model B

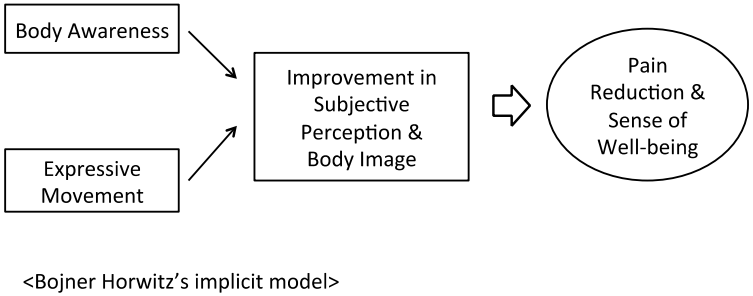


Figure 6. Bojner Horwitz's implicit model

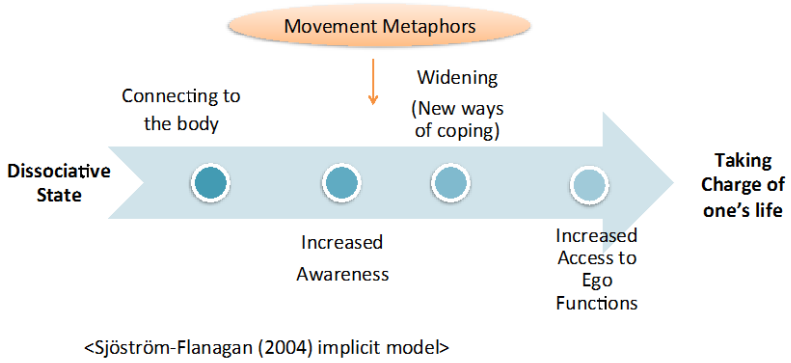


Figure 7. Sjöström-Flanagan's implicit model

4.2.4.2 Thematic analysis of the implicit models. From the four implicit models of DMT for chronic pain management, several key themes were identified as factors and mechanisms for the therapeutic process of DMT. They included 'integration/connection', 'self-awareness', 'differentiation/objectification', 'expressive movement', 'loosening/releasing', 'meaning-making', 'therapeutic relationships', and 'feeling in charge'. Brief description of each theme is provided below.

Integration/Connection. This theme refers to DMT's mechanism of integrating different domains of individuals' perception and experiences (ADTA, 2009). Three of the implicit models described experience of chronic pain as a state of disintegration, dissociation or 'a problem of linkage' (Bullington et al., 2003; Good, 1992; Jackson, 1994). Thus they suggest that one of the important mechanisms of DMT is the reintegration of the isolated pieces and restoration of a sense of coherence for these individuals. Integration starts with connecting to one's body and reclaiming one's dissociated body as 'one's own body'. Then peoples' thoughts, feelings and memories that had been disconnected from their awareness are integrated as well. Integration also includes reconstruction of one's identity, which requires the ability to integrate the self of the past and present as well as to project oneself into the future.

Loosening. This theme refers to DMT's capacity of loosening up rigidity in all levels (i.e., physical, emotional, cognitive and social), enabling individuals to become more open and flexible for a new experience. This may be achieved by first releasing physical and emotional tensions through movement, increasing awareness and expanding the movement repertoires, and promoting creativity. This, in turn, may lead to widening attention, increased social interactions and opening up to new and various ways of coping.

Self-awareness. This theme refers to both sensitivity toward one's physical condition and having a perspective on the psychosocial situations related to the pain experience. Increasing self-awareness was included in all implicit models in some degree. They recognized that DMT allows people to 'listen to their body' and become more aware of their physical capacity, characteristics

of pain, pain intensity and attitude towards one's body. Through the authentic movement process, individuals may also become aware of underlying psychological issues connected to their pain experience.

Articulation. Differentiating various aspects of the pain experience toward articulation of perception was identified as a mechanism of DMT. Here the term articulation is used to describe the ability to or a process of developing clarity about thoughts or feelings, and specifying or differentiating characteristics of an experience. Exploring one's pain experience and expressing the pain, as well as thoughts and feeling associated with pain, through symbols and metaphors may allow one to 1) differentiate different aspects of the pain experience (e.g. parts that are affected by pain and those that are not; times when one is in pain and times when one is not) and 2) separate self from pain and see one's pain in a more objective perspective. This process might help people to perceive pain as more manageable.

Expressive movement. Engaging in a spontaneous movement exploration may evoke certain emotions allowing people to experience various emotions and become aware of them. While acting out one's thoughts or feelings, individuals may be able to discharge repressed emotional tensions, which may lead to physical relaxation and pain reduction. Often metaphors and symbols were accompanied in expressing specific thoughts or feelings related to pain experience. Having a means of self-expression in movement itself was identified to have a healing effect.

Meaning-making and transformation. Meaning-making was recognized as an essential part of the healing process in DMT for chronic pain management. Movement exploration and symbolic expression may facilitate individuals to find some kind of meaning of their pain experience. The initial meaning which can be body/emotional-meaning could be developed and articulated to a consciously recognizable, a higher- order meaning (Bullington et al., 2003). As people develop awareness and integrate their experiences and perceptions, these meaning may evolve toward a more holistic and healthy one.

Therapeutic relationship. The relationship between the client and therapist was identified as a central factor. Dance/movement therapists provide an open and safe therapeutic structure in which clients can feel accepted as they are, feel safe enough to engage in the self-exploration process and sustain through the vulnerable and overwhelming stage of therapeutic process.

Taking charge. The implicit models recognized that one of the main therapeutic outcomes of DMT is individuals' achievement of taking/feeling in charge of their life. DMT supports individuals to strengthen and restore a sense of self and have a sense of order and control over their experience, thus enable them to give up the victim mentality and reclaim self as the agent one's life.

4.2.4.3 A meta theoretical-model (Formative model). The theoretical model shown in figure 8 was developed based on the general factors and mechanisms that were identified as most important in the implicit models.

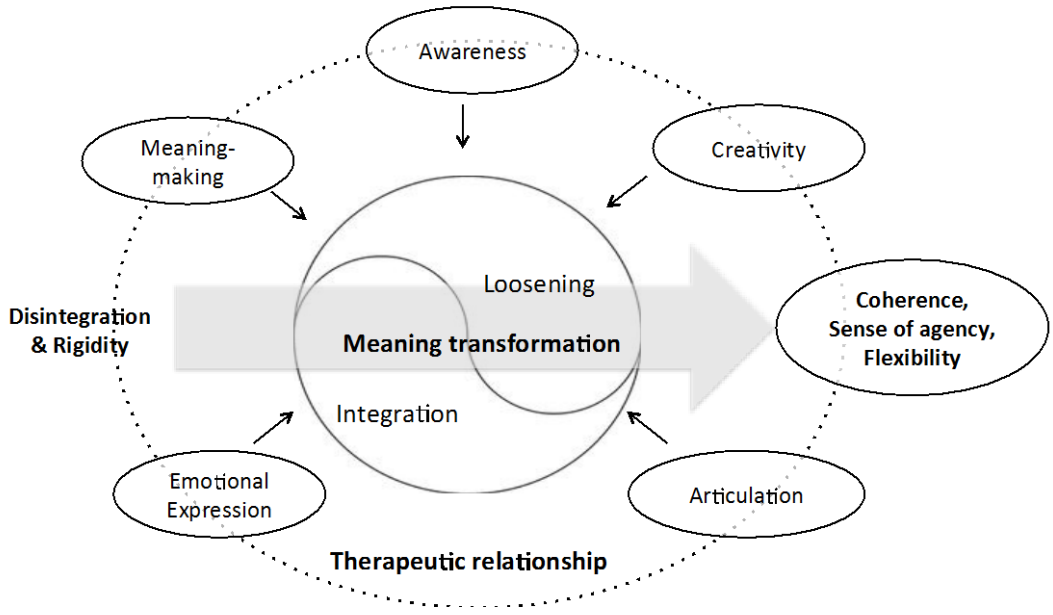


Figure 8. The meta theoretical- model (formative model) diagram

The therapeutic process of DMT for people with chronic pain is a gradual process of moving from a state of chaotic disintegration and rigidity toward achieving a sense of coherence, flexibility, and sense of control. Throughout the therapy process the meaning individuals ascribe to the pain experience may evolve and be transformed so that it can be accepted and integrated into the context of one's identity and life trajectory. Two mechanisms are identified as central to this process, namely 'integration' and 'loosening'. *Integration* refers to the process of restoring broken connection between mind and body and sense of conference and continuity of one's identity that was interrupted due to the pain experience. *Loosening up* denotes the process of releasing tension and rigidity not only in a physical dimension but also cognitive, emotional, socio-behavioral level. These two divergent types of mechanisms (one binding/connecting and one releasing/liberating) dynamically work together with several other factors – self-awareness, emotional expression, articulation, meaning making, and creativity - supporting this process. The movement-based exploration of self, pain and relationship with others allow individuals to develop awareness and insight, to express repressed feelings thereby help them to decompress/discharge emotional tensions. In this context, DMT also addresses cognitive functioning by helping people to develop a more articulated understanding of one's body, movement and pain and explore the meaning of the pain experience. Awakening individuals' creativity plays a role in supporting the therapeutic process and opening up possibilities towards new ways of coping. The clinical encounter and therapeutic relationship that is non-directive, open and accepting is a critical therapeutic component in DMT. As results of the process, individuals gain a sense of coherence and wholeness, become more open to alternative/new ways of coping, and take charge of their life, reclaiming self as the agent of one's life.

4.2.5 Discussion of the Findings

A search of the literature resulted in the identification of four DMT research studies for people with chronic pain. Visual models depicting the implicit process models based on the

findings from each study were drawn. I then identified key concepts present in these implicit models. Next, I constructed a visual formative model to represent potential relationships between these key concepts.

Two central concepts depicted in the model were *integration* and *loosening up.* A holistic integration of physical emotional, cognitive and social selves is one of the fundamental therapeutic mechanisms as well as a goal of DMT (Payne West, 1984; Rossberg-Gempton & Poole, 1992). The mechanism of *loosening up* is based on the basic principle of mind-body integration since the model implies that a change in one level (i.e., mobilizing one's body) facilitates changes in other levels of a system (i.e., breaking the rigidity in one's feelings and thoughts) (Goodill, 2005). Therefore we can see that the model employs the core principle of DMT as its main therapeutic mechanism. Since chronic pain is often portrayed as 'a problem of linkage', 'disorientating', 'disintegrating', or 'unmaking' (Bullington et al., 2003; Good, 1992; Jackson, 2005; Scarry, 1985) and DMT's fundamental mechanism and goal is bringing integration to an individual (Levy, 1992; Stanton-Jones, 1992), the findings from this model suggest that DMT can be a powerful therapeutic approach to address one of the central issues in chronic pain. The model also included various factors that contribute to the therapeutic process of DMT, namely self-awareness, articulation, emotional expression, meaning-making, and creativity. Body awareness (including both cognitive and affective perception of one's body) is one of the main therapeutic outcomes of DMT (Cruz & Sabers, 1998; Ritter & Low, 1996). Empirical studies have reported DMT's efficacy in increasing person's sensitive and knowledge of one's body (Christup, 1974; Franklin, 1979; McCarthy, 1973; McConnell, 1988; Ohwaki, 1976; Reiland, 1990, as cited in Ritter & Low, 1996). It is reported that people with chronic pain often experience distortion in body perception, dissociation or motor-neglect (Galer & Jensen, 1999; J. Lewis, McCabe, Shenker, & Blake, 2003), and researchers suggested the use of treatments that target cortical areas (Lewis, Kersten, McCabe, McPherson, & Blake, 2007). Findings from the model suggest that the therapeutic process of DMT involves experiences that

stimulate the key functions of cortical areas such as memory, attention, perceptual awareness, reflecting, articulating and meaning processing through movement. Therefore, we may contend that the therapeutic mechanism of facilitating integration based on the improvement of body awareness, articulation and meaning-making to achieve a coherent perception of self is congruent with previous studies. A future study to test the efficacy of DMT in changing the body perception in people with pain using appropriate measures and methodological rigor might be useful. Bullington (2009) described that for the person with chronic pain "the world has closed down and the sense of self is reduced . . . . in a tiny world dominated by pain." Thus the goal of rehabilitation has to include "opening up the field of experience from pain centered to the world pole" (p.107). The formative model shows that DMT stimulates creativity and promotes diverse ways of moving, thinking and expressing which may open up individuals' scope of perception and coping behaviors.

The model depicts how dynamic and complex interactions between the above mentioned therapeutic factors may support individuals' process of meaning transformation so that they can come to terms with their pain experience and find a sense of order in their life.

A couple of limitations in constructing this formative model need to be noted. First, the limited number of existing DMT research studies in this area of practice was a major limitation. Only four studies were included for analysis. Moreover, the first three studies were conducted by same group of authors (i.e., Bullington, Nordemar, Nordemar, & Sjöström-Flanagan, 2003; Bullington, Sjöström-Flanagan, Nordemar, & Nordemar, 2005; Sjöström-Flanagan, 2004). It seems like the participants of these studies might be from a same population (i.e., patients at a pain clinic in Sweden). Therefore, this formative model was drawn from the ideas of two groups of researchers. However, having the two models developed from same group of researchers (Bullington et al., 2003 and Bullington et al., 2005) helped us to see the evolution of a model as their 2005 study provided more elaborated information built upon the findings from the 2003 study. Bojner Horwitz (2003) study was a quantitative study focusing on the efficacy of a DMT

intervention on specific outcome variables (i.e., change in stress related hormones and participants' self-perception of mobility, life energy and movement pain) rather than examining therapeutic mechanisms of DMT. Therefore, the implicit model depicted from this study had limitation in terms of the number of variables represented and their relationships.

All four studies were done in Sweden and the ethnic backgrounds of the participants were identified to be from Nordic, Baltic or Middle-Eastern origin. Demographic information from the studies showed that the majority of the study sample was female and socio economical status of the participants were not identified in most of the studies. Therefore, the factors and process identified in the model may not be representative of the experiences of DMT for chronic pain in men as well as people from non-northern European cultural heritage.

4.3 Development of Reflexive Grounded Theory Model

4.3.1 Objective

The objective of this part of the study was to 1) understand the meaning of resilience in people living with chronic pain and 2) develop a grounded theory on the factors and mechanisms of DMT in building resilience for people with chronic pain based on the findings from interview data. The research questions were:

> RQ1: What is the meaning of resilience in people living with chronic pain?
> RQ2: What are the factors and mechanisms of DMT in building resilience for people living with chronic pain?

4.3.2 Overview of the Method

To answer the research questions, personal accounts of people's understanding and experience of resilience in chronic pain, and DMT's factors and mechanisms for resilience building in people with chronic pain were obtained through qualitative interviews. The interview data were transcribed and analyzed following the grounded theory analysis procedure. Based on the findings, a grounded theory model was developed.

4.3.3. Data Collection

4.3.3.1 Sampling. An iterative sampling process was used throughout the data collection according to the GT principle of *theoretical sampling*. As I continued the interviewing process, I questioned what type of data was needed next, and selected subsequent participants based on the emerging concepts. The following figure shows the theoretical sampling process.

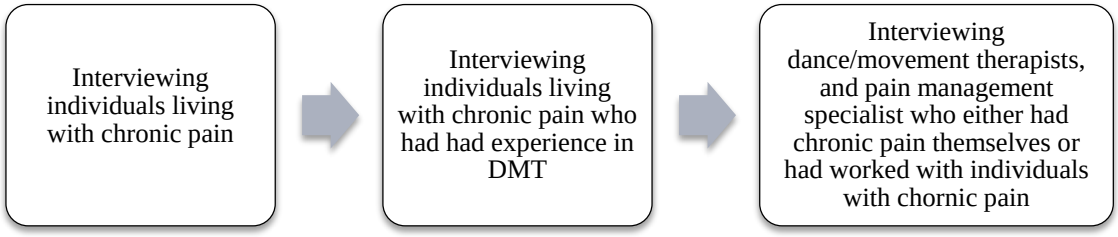


Figure 9. Theoretical sampling process

Initial recruitment targeted individuals who are coping with a chronic pain condition regardless of the experience with DMT. Then as the data collection process continued, I interviewed people who had had an experience in DMT treatment as well as dance/movement therapists and pain management specialists who either had chronic pain condition themselves or had worked with individuals with chronic pain.

Approval from the Institutional Review Board (IRB) of Drexel University was obtained before commencing recruitment and data collection. The participants were recruited by means of convenience sampling from multiple sites such as a private psychiatrist's office, a pain management program at a local community health center, and through professional networking. Posters and flyers as well as referrals from medical staff at the research sites were utilized for recruitment. The following inclusion criteria were used for people with chronic pain: (a) age 18

years old or older; (b) diagnosis of chronic benign pain with a duration of at least 6 months; and (c) proficient in English. In addition, the following exclusion criteria were applied: (a) cognitive impairment and (b) current mental illness such as schizophrenia, other organic psychotic disorder, borderline personality disorder, or antisocial personality disorder or current alcohol or drug abuse. Inclusion criteria for the therapists were: (a) dance/movement therapist or pain management specialist satisfying the above inclusion and exclusion criteria or (b) dance/movement therapist or pain management specialist who has worked with individuals living with chronic pain.

4.3.3.2 Procedure. A semi-structured interview protocol with open-ended questions asking participants about their understanding of resilience, and understanding/experience of DMT's therapeutic process for chronic pain management was developed (See Appendix A for the interview guide).

The in-person interviews took place in multiple locations – a private counseling office, a conference room at a community health center, and an office at Drexel University. I met with each participant individually for about an hour to conduct a semi-structured interview. I asked questions to learn; a) their present knowledge and experience of resilience; and b) what they might view as possible factors and mechanism of dance/movement therapy in building resilience. As it was likely that the participants might not understand the concept of resilience, questions targeting attributes of resilience were asked. I actively engaged with the participants throughout the interviews, responding reflexively to emergent concepts in the data, and acting upon analytic intuitions. I listened to the participant's answer and responded by refining questions to probe more deeply into the topic. The interview questions were modified as interviews accumulated to reflect emerging theory. The ongoing analysis of collected data informed the direction of the next interview and explicitly aimed at developing theory. The interviews were recorded and transcribed into text format. Since data saturation was reached, data collection was halted after interviewing 16 people.

4.3.4 Data Analysis

To analyze the data, I followed the Glaserian Grounded Theory approach in which the researcher is to 1) identify the broad categories of behavior (opening coding) and move to identifying the core categories which is "the central phenomenon around which all the other categories are related"(Strauss & Corbin, 1998, p.116), 2) delimit coding to only those variables that relate to the core category (selective coding), and 3) generate concepts that conceptualize the relationships between the categories as hypotheses to be integrated into a theory (theoretical coding) (Glaser 1978).

Since I am a novice researcher when it comes to utilizing grounded theory method, a 'topic guide' (Lowe, 1995) was developed to define the focus of the initial data analysis around particular themes and categories. Although the fundamental premise of grounded theory is to discover the theory grounded in the data and avoid preconceived ideas (Glaser & Strauss 1967), the idea of the researcher embarking on a grounded theory study as "tabula rasa" has been mentioned as a misconception as all researchers have guiding interest and perspective as they enter the field (Gasson & Waters, 2013; Urquhart, 2001). So the emphasis is on having a theoretical sensitivity based on the researcher's knowledge basis, staying open-minded throughout the research process and avoiding "forcing the data" into preconceived theoretical framework (Gasson & Waters, 2013; Glaser, 1992; Ng & Hasse, 2008). Thus for this study, a topic guide was generated based on the three questions suggested by Glaser (1978) to be useful in generating open codes, namely: What is this data a study of? What category does this incident indicate? What is actually happening in the data? (Glaser, 1978, p.57)

Table 3. Topic guide

Glaser's Questions	Topic Guide
1. What is this data a study of?	• What is the meaning of resilience in people with chronic pain? • What are the factors and mechanisms of DMT in resilience building for people with chronic pain?
2. What category does this incident indicate?	- Unit of analysis: individual patient's discourse about the meaning of resilience in chronic pain and understandings on therapeutic factors and mechanisms of DMT through a semi-structured interview - Categorization focus: Attributes of resilience and crucial factors of DMT in resilience building - Data sample: chronic pain patients, chronic pain patients who have experienced DMT, dance/movement therapists who have worked with chronic pain patients, and pain management specialist
3. What is actually happening in the data?	Conducting open coding

The following description describes the analytical processes. It was not a clear-cut process as I had to move back and forth and the stages overlapped with each other.

4.3.4.1 Open coding. The transcribed interview scripts were reviewed line-by-line repeatedly as each statement was considered for meaning. For coding, I used the software Atlas, ti. The codes were assigned to words or groups of words to sum up what the participants were sharing. A process of *constant comparison* was used, which refers to a simultaneous and concurrent process of coding and analysis (Glaser & Strauss, 1967). This process of constant comparison was employed through utilizing memos to record and reflect my thoughts, questions, and significant themes that emerged, and concepts that were relevant to the literature while coding. Each memo was given a heading so that I could later connect it with other subsequent memo that is interrelated. Through constant questioning and generating memos, conceptualization began to take place and main categories started to emerge at the early stage of coding.

4.3.4.2 Conceptual mapping. Based on this initial coding process, I developed a coding scheme, which was a diagram that illustrated a network of association between the categories that had been identified. This method of drawing 'a diagram of the relationships among the variables"

(Artinian, 1982, p. 379) that describes the categories emerging from the data is called ‘conceptual mapping’ (Artinian & West, 2009). A conceptual map is “ a theoretical model that shows a tentative diagram of reality as understood by the investigator” (p. 28). This conceptual map, which became an initial prototype, was then tested against the data by going back to the transcripts to look for the connections across the data, and evolved according to the findings from the data.

4.3.4.3 Selective coding. Next stage was selective coding, which means delimiting coding to only those variables that are relevant to the emerging concepts. The selective coding process in this study meant that during coding I only chose those pertinent passages from the transcripts and added these to the core category. A *core category,* an issue that was most repeatedly mentioned, emphasized and related to by the participants, was identified from various sub-categories. Theoretical saturation was reached as no more new attributes of the categories were found.

4.3.4.4 Theoretical coding. The final step was the theoretical coding, which is a highly interpretive abstraction process of identifying relationships between the concepts. This was done by reviewing and sorting theoretical memos, fitting and refitting the codes and trying out different ways of connecting concepts to each other by modifying the conceptual map several times.

4.3.4.5 Synthesis. “Through constant interaction with the data, constant comparison, and asking questions of the data” (Robson, 2002, p. 367) the theory was built. I integrated and synthesized the categories into a core set of categories and then developed a narrative in which the properties, dimensions, and circumstances under which they are connected and explained, which is the grounded theory (Amir, 2005).

4.3.5 Findings

4.3.5.1 Study Participants. A total of 16 people participated in the interviews. Twelve participants were lay people living with a chronic pain condition. Four of the 12 participants had

experienced DMT treatment in the past. Three people were dance/movement therapists who either had a chronic pain condition themselves or who had worked with people with chronic pain. One participant was a psychiatrist specializing in chronic pain management. Table 4 and 5 display the demographic and pain characteristics of the participants Although theoretical sampling was used to capture a wide range of participant characteristics, I was unsuccessful at recruiting more male participants and people who were working full-time.

Table 4. Demographic characteristics of the participants from Phase I

Mean age	Gender	Race
56.2 yrs (SD=10.43 yrs)	Female 93.8% (15) Male 6.2% (1)	White 75%(12) African American 19% (3) Asian 6%(1)

Table 5. Pain characteristics of the participants from Phase I

Variables	%(n/12)	Variable	%(n/12)
Average Pain duration	17.8 yrs	**Type of pain**	
Diagnosis		Neuropathic pain	33.3%(4)
Arthritis	42%(5)	Inflammatory pain	25%(3)
Complex Regional Pain	33.3%(4)	Mechanical/Compression	16%(2)
Fibromyalgia	33.3%(4)	Combination of pain	25%(3)
Degenerative disc disorder	25%(3)	**% of time in pain**	
Spinal stenosis	16%(2)	40-50%	25%(3)
Trigeminal neuralgia	8%(1)	60-70%	16.7%(2)
		80-100%	58.3%(7)

4.3.5.2 Thematic Framework of The Meaning of Resilience in Chronic Pain

During interview participants were asked, "What does "being resilient," mean in living with chronic pain?" An additional question was provided to explain the concept of resilience in case the interviewee was not familiar with the concept, "What does it mean to go on with your life despite the impact of chronic pain?" Participants were able to list a range of concepts in relation to resilience in chronic pain, and several dimensions emerged from the data (Table 6). Nine categories emerged from the data: 'Acceptance', 'Adapting to life with pain', 'Keep bouncing back/in spite of', 'Keeping hope alive', 'Staying on top of things', 'Trusting self', 'Positive reinterpretation & benefit finding', 'There is more to life than pain', and 'Sense of purpose'. These formed four major categories: 'Adapting to life with pain', 'Not giving up', 'Being in control', and 'Positive refocusing'. The core category for the resilience data was "Go on with life despite pain" as this was the participants' ultimate aim.

Table 6. Major categories, categories and codes: Meaning of resilience in chronic pain

Major Categories	Categories	Codes
Adapting to life with pain	Acceptance coping	Accepting pain as a part of life
		Mindfulness
	Adapting/Making adjustments	Do what you can the way you can
		Being creative
		Sense of humor
	Balancing resilience and risk factors	Promoting resilience factors
		Avoiding/minimizing risk factors
Not giving up	Keep bouncing back/ 'in spite of'	Enduring pain
		Hardiness
		To be resilient is to live
		Go on despite pain
		Bouncing back everyday
	Keeping hope alive	Maintaining hope
		Open for new treatment options
Being in-control	Staying on top of things	Having coping skills to self-manage
		Active coping
		Knowing one's pain and limitation
		Sense of control
		Planning ahead

		Goal setting
		Sense of humor
		Continue learning/seeking resources
		Making the best of things
	Trusting self	Self-efficacy
		Believing in self
Positive refocusing	Positive reinterpretation & Benefit finding	Appreciation for life
		Growth
		Focusing on the positives
		Benefit finding
		Meaning making
	There is more to life than pain	Pain as a minor disability, a part of self
		Positive outweighs pain
		Bigger perspective
		Still a good life
	Sense of purpose	Benevolent activities
		Importance of spirituality
		Strong sense of goals and purpose

Adapting to life with pain. This major category consists of 'acceptance coping' and 'adapting/making adjustments'. Acceptance coping refers to people attitude of accepting that a difficult situation is real and must be addressed (Carver, Scheier, & Weintraub, 1989). Participants recognized that being able to accept pain as a part of one's life condition and adapting to the given situation are important aspects of being resilient. 'Acceptance coping' included accepting the changes pain has caused in life (P7), properly grieving the loss (P15), as well as the concept of mindfulness in which one acknowledges the body part affected by pain as a part of oneself without judgment that pain is bad and needs to go away (P9). Adapting/making adjustments included finding alternative ways to maintain the things they used to enjoy from their pre-chronic pain life, actively making adjustments and being creative in finding better ways to take care of the tasks (P1).

> It's woven into my life now and I have gotten better at coping with it. It's a part of my fabric of life and a part of who I am. I've come to accept that. (P1)

> Doing your best you can with what you have, acknowledging that things have changed. . . . Even if it's not like the old life and you can't do it like you used to but willing to

> modify and do the best you can. (P15)

People also identified that using humor and spirituality as important aspects of resilience.

> In some ways I kind of have to be able to laugh about myself to not get too serious or depressed about it. I talk to myself that "You have to be like mother Theresa or somebody. Just hang in there and put up with it all!" (P11)

> If you are willing to see the blessings and to see the miracles, you know… resilience is expecting miracles everyday. Daily supply of strength. The grace is sufficient that's what gets me through and God is the source of my strength. (P7)

'Balancing resilience factors and risk factors' was identified as an important part of chronic pain adaptation and resilience factors. Participants listed numerous factors that support and strengthen resilience which included various strategies to manage physical symptoms, maintaining emotional health by balancing emotions, cognitive coping strategies and various relational coping skills. They also identified factors that negatively affect their ability to cope with pain such as environmental conditions, catastrophic thoughts or destructive emotions, social isolation or challenges in interpersonal relationships. Individuals' perception of resilience appeared to be related to the ability to manage and balance these positive and negative factors.

> So you have pain anyway, so you gotta reach beyond and break that pain. You have an option. You choose to do things that are going to help you to cope with it and try to learn how to change the things that's going to make you worse, anger, stress, criticizing yourself . . . . those are all going to do no good to you, you know. It's going to be really hard but you take baby steps. (P7)

Not giving up. This category consists of 'Keep bouncing back/ in spite of'', and 'Keeping hope alive'.

'Keep bouncing back/in spite of' appears to be one of the most significant traits of resilience and was commonly described by the participants. It refers to having not only the strong mentality related to coping with adverse effects of pain such as hardiness, endurance and determination not to be defeated by pain but also behavioral practice to get on with life in spite of pain, 'keep bouncing back' (P10) and 'learn to live with it' (P3).

> I feel that I am gonna overcome this whatever it takes, I am going to do it . . . . being resilient is to go on and live life through whatever that means and have positive experiences to the extent possible despite the pain. (P6)

> It's okay to cry and get upset but you have to pick yourself up again and again. . . . to push pass and rise above in spite of and also integrating the pain, learning to live with the pain to some extent. (P3)

Some participants stated that 'to be resilient is to live', as one woman described, "It means that you can't lay there and die. In spite of the pain, you gotta get up and do what you gotta do. You can't let it stop you, cause if you stop you are finished." (P3) For these people daily living was perceived as 'resilience by default'. (P9)

Another aspect of 'not giving up' was 'keeping hope alive', which had to do with continuing to stay open to new treatment options and to hope that one's condition might improve some day. Although almost all of the participants had had a long history of pain (17.8 years in average) and said they had accepted pain, they acknowledged that having a hopeful attitude is a significant part of resilience. Many of them stated that they actually see an improvement in their ability to deal with pain compared to the past, which gives them hope for the future.

Being in-control. Participants identified that 'being resilient' can be translated into 'being in control' of their pain condition. This category includes 'Staying on top of things' and 'Trusting self'.

Staying on top of things. Participants identified that being resilient is having to "stay on top of things instead of having to 'react' to it" (P6). They also described that resilience is 'dealing with pain and living in your body best way possible' (P14); having personal coping skills and resources to manage symptoms are important component of it. The codes linked to this category were 'active coping', 'goal setting', 'planning ahead' and 'sense of control'.

People said having coping strategies give them a sense of control, which may be a foundation for resilience (P12). Other codes in this category were 'continuing to learn and resources' and 'making the best of things'. Participants said:

> It's about being able to get in front of it rather than having it drag you down. (P9)

> It is very important to know how to do when I hurt, having tools to use, either to sit down and forget about everybody, or listening to music and make my mind to go to different

> locations. . . . being resilient is continuing to develop skills that work better for you. (P2)
>
> I think having an element of control over pain and what I do is the secret for resilience. (P12)

Trusting self. 'Believing in self' and 'self-efficacy for pain management' were included in the category 'being in-control'. People identified that resilience has to do with having a belief that one is capable of coping with pain and overcoming different kind of challenges it creates.

> Believing that I am gonna be an overcomer . . . . If I fight it and keep moving, climbing the high heights and deep with deeps and I will overcome it. I do believe this. (P7)
>
> You must believe in yourself when everyone else doubts. That's being resilient. Self love, self care, and having a faith in yourself… those are key factors. (P3)

Positive refocusing. This category is related to the perception of resilience as making an effort or habit of having a positive perspective or ability to find positive in a negative circumstance. The category includes 'positive reinterpretation and benefit finding', 'there is more to life than pain', and 'sense of purpose'.

Participants recognized that appreciating life and things that one is still capable of doing, focusing on the positive aspects rather than the negative, recognizing the personal growth as a result of living with pain and finding benefits of having been through sufferings in life as an important aspect of being resilient. Some people mentioned that 'finding some good meaning' of their experience is also the key to stay resilient.

> There are a lot of benefits I think. I think I take much better of myself. It has made me more compassionate, more loving, more empathetic and sympathetic. It makes me concerned about other people and what they are going through. It almost makes you to be a better person in a sense. (P2)
>
> It means finding some good meaning with whatever I have to work with. . . . a lot of times I don't like the pain but it is finding something positive with whatever consciousness or existence I have to work with. (P6)
>
> It means being able to step away from yourself. Looking at things in a different, more positive perspective. Then I will be able to come back to sort of my mind and think that it's not the end of the world. There are resources out there, that kind of things. (P11)

The idea of acknowledging 'there is more to life than pain' was implied many times in

accounts of what resilience means in chronic pain. Those who specifically mentioned it said that they try to take into more dimensions of their lives and not so focused on the pain. One participant said she tries to look at her pain as “not a major disability but a minor kind of grinding disability” (P9) and there are a lot more positive things in life. “Pain is unpleasant but having as many pleasant aspects to outweigh it as much as possible.”(P6)

> Despite having the pain how do you live a fulfilling life? It’s so that their whole life isn’t just medical or pain. There is some piece of that but then you still make time for socializing with people, make time for your family, and do the things you enjoy so it is still a good life. (P 15)

Many participants mentioned having a ‘sense of purpose’ as an important aspect of resilience. People mentioned family especially children give them a sense of purpose to be strong and resilient. Some people said that living with pain has made them to become a better person and a way of being a resilient person is to have a new purpose of life to use the wisdom and compassion to help others.

> I guess my son and my husband. You need something a goal or purpose or something to keep you going. I lived to see him graduating and practicing. That keeps me going. Something has to motivate you. (P5)

> I think it has opened my eyes how precious every minute here in this life is. It gives me a new purpose of life. Now becoming a spiritual director I think I can be very present for people and not judgmental, and I think the pain has helped me with my compassion, really it has been deepened. (P1)

4.3.5.3 Grounded Theory: Meaning of Resilience in Chronic Pain. The figure below shows the visual display of the thematic framework of meaning of resilience in chronic pain.

Figure 10. Thematic framework of the meaning of resilience in chronic pain

Meaning of resilience in chronic pain is perceived as 'going on with life despite pain'. Four components of resilience were identified namely adapting to life with pain, not giving up, being in-control, and positive refocusing. People recognized that being resilient first starts with accepting pain as reality and embracing it as a part of individuals' 'fabric of life'. Resilient individuals make adaptations and adjustment to maintain the quality of life as best as they can and try to balance those factors that affect them positively and negatively. Resilience also has to do with a fighting spirit of endurance to keep bouncing back and keeping the hope alive that their future will be positive. Being in-control by staying on top of things and believing in one's capacity to cope with pain is an essential part of resilience. In addition, resilience in chronic pain means constantly refocusing to positive aspects of one's experience by positive reinterpretation and benefit finding, reminding self that there is more to life than pain, and believing that there is a meaningful purpose in one's life that has been deepened because of the experience of living with

pain.

4.3.5.4 Discussion of the findings. The literature indicated that there is lack of consensus on the definition of resilience, yet the fundamental construct of resilience includes the capacity for, process of, or outcome of successful adaptation in the context of distress to maintain or regain psychological well-being and physiological homeostasis despite the adversity (Friborg et al., 2006; Herrman et al., 2011; Karoly & Ruehlman, 2006; Sturgeon & Zautra, 2010). Only few theorists have examined the meaning of resilience in the context of chronic pain (Karoly & Ruehlman, 2006; Sturgeon & Zautra, 2010; Yeung, Arewasikporn, & Zautra, 2012). Therefore, in this part of study, I aimed to explore what it means to be resilient through obtaining personal accounts of people's experience of living with chronic pain.

It was clear that people commonly used 'despite' or 'in spite of' terminology to describe the essential construct of resilience in chronic pain management, which is congruent with general resilience literature (Herrman et al., 2011; Luthar et al., 2000; Masten & Wright, 2010; Ong, Bergeman, & Boker, 2009).

Sturgeon and Zautra (2010) proposed that there are three primary concepts that are crucial in the construct of resilience in chronic pain management namely, *recovery* - ability to bounce back and regain equilibrium, *sustainability* –capacity to continue forward in the face of adversity and *growth* – "realization of greater understanding of one's capacities, and new learning that arises as a consequence of the stressful experience and outcomes of one's coping efforts." (p.106) All three concepts were present in the current study. The theme 'Not giving up' with the subcategories *keep bouncing back* and *keeping hope alive* was equivalent of the concept *recovery.* 'Adapting to life with pain' and the subcategories 'adapting and making adjustments' and 'balancing resilience and risk factors' corresponded to the *sustainability.* Several codes from 'Positive refocusing' with subcategories *positive reinterpretation and benefit finding* (of which 'growth' was one of the codes) and *sense of purpose* parallel to the *growth* from Sturgeon and

Zautra's model. 'Being in-control' can be viewed as an overarching concept under which all three elements might operate.

The theme 'balancing resilience and risk factors' from this study was congruent with the 'Stable-Modifiable Model of Vulnerability and Resilience Processes' suggested by Yeung, Arewasikporn, and Zautra (2012). In this model, Yeung and colleagues proposed that there are two factors, *resilience resources*, and *vulnerability factors*, that dynamically interact to determine individuals' coping capacity in chronic pain. Many of the factors participants reported in the current study parallel with both stable and modifiable resilience resources Yeung et al identified in their model (i.e., use of approach coping, benefit finding, emotional complexity, and social intelligence etc.). Although not reported in detail in this dissertation due to the limited scope of this section of the study, there was a wide variety of resilience resources reported by the participants beyond the model presented by Yeung and colleagues. A separate analysis of these resources should be conducted to enhance the body of knowledge in this topic in the future.

4.3.5.5 Thematic framework of DMT factors and mechanisms for resilience building in chronic pain .To answer the second research question "What are the therapeutic factors and mechanisms of DMT for building resilience in people with chronic pain?" the themes and categories related to this question from the data were separately grouped and analyzed. Sixty-five codes were initially identified from the open coding. Fifty-two codes or factors important to the participants were formed during the selective coding process. Table 7 illustrates the thematic framework of DMT factors and mechanisms that emerged from the interview data. Twelve categories emerged from the data: 'Physical benefits', 'Mobilizing', 'Kinesthetic imagery', 'Emotional awareness', 'Discharge of emotion', 'Positive emotions', 'Noticing', 'Articulation', 'Reframing', 'Mind-body connection', 'Meaning making', and 'Interpersonal connection'. These formed four major categories: 'Enactment', 'Emotional management', 'Integration/ New ways of connecting to self and other' and 'Structural transformation'. 'New ways of living in the body and

being in the world' was selected as the core category for this set of data. A brief description of each major category is given with supporting quotations.

Table 7 Major categories, categories and codes: DMT factors and mechanisms for resilience building in chronic pain

Major categories	Category	Codes
Enactment	Physical benefits	Breathing
		Functional improvement
		Increasing life energy
		Relaxation
	Mobilizing/Releasing	Activating
		Unlocking/Loosening up
		Physical exertion/Releasing
	Enaction	Articulate/differentiate
		Enaction
		Expressive movement
		Externalizing
		Kinesthetic imagery
		Self-directed movement
		Symbols and metaphors
		Tangible sort of hope
		Reinforcement
Emotional management	Emotional awareness	Experiencing emotions
		Emotional awareness
	Discharge of emotions	Emotional outlet/getting it out
		Stress reduction
	Positive emotions	Ability to play/having fun
		Altered state
		Joy
		Instilling hope
		Music
		Peace and calmness
Integration/New ways of connecting to self and other	Mind-body connection	Acceptance
		Accesses inner material
		Body-mind connection
		Building new relationship to body
		Moving with music
		Paying attention to self and body
		Trusting one's body
	Meaning-making	New meaning construction
		Identity reformation
		Narrative reflection
		Temporal reflection
		Symbolic interpretation & Cognitive Integration
	Interpersonal connection	Building social support system
		Role and identity in a group
		Sharing
		Therapeutic alliance with the therapist

Structural transformation	Articulation	Bodily articulation
		Objectification
		Temporal articulation
		Differentiation
		Noticing/Recognizing strength
	Re-patterning	Reprogramming
		Reducing fear-avoidance
		Self-efficacy
	Widening	New ways of thinking & coping
		Opening up

Enactment. Participants recognized the *physicality/action* as a primary factor and mechanism of DMT in building resilience. Several aspects related to this major category were identified, namely 'physical benefits', 'mobilizing/activating', and 'enaction'.

Physical benefits. Participants identified a range of physical benefits from participating in DMT as the basis for resilience building process. One participant said that since her body is 'the primary line of defense that keeps her mind to be resilient' (P9), it is important to foster physical strength and body intelligence in DMT. The physical benefits that DMT offers included breathing better, loosening stiffness and tension, enlivening the life energy, increasing relaxation, improving coordination and integration of the body parts.

Mobilizing/activating. This category refers to the DMT mechanism of releasing and breaking away from a closed-in, stuck or an imprisoned state of mind and body to a sense of action, flow and movement. Several people mentioned this aspect of DMT with metaphoric terms such as 'unlocking' (P2, P12), 'breaking out of prison' (P7), or 'getting out of a stuck place' (P14). They described that the sense of activation and freedom a person experiences at the bodily level can open up possibilities of transformation at other levels; this change may then transfer back to creating practical improvement at the functional level.

> In DMT session, it unlocks something that's been blocked. That enables them to move more freely. So there is flow, flows to thoughts, imagination and play. If they can break through to a level of creativity that surprise them and interest them, then that can breakthrough to a movement flow that literally may get them standing on their feet, and may build strength in the moment to their bodies. (P13)

Enaction. This category refers to the property of DMT to use the actualizing power of embodiment and action. The First component people identified in relation to this category was the self-directive nature of movement exploration in DMT. Many participants recognized it as a unique characteristics of DMT and emphasized the importance of fascinating spontaneity in fostering resilience:

> DMT does not force a certain movement pattern onto the person as the only 'right' way to be in the body. The origin of getting to that place of standing came from their own wisdom, strength, and creativity that they found and propel them to move. (P14)

The self-directed, spontaneous movement exploration and expression was described as a way to empower one's sense of self.

Another component addressed by the participants was the 'reinforcing' or 'reiterating' effect of acting out one's thoughts or therapeutic goals in movement.

> DMT is a strength-based modality, and we do not just talk about the strength but we can manifest that in movement so it can be doubly re-iterated. You can actually see and feel in the somatic form how those strength are real for you. (P13)

> It's more active. It opens you up to see greater things and you begin to feel it. When the more you feel, something it builds. You begin to believe it, so as you do the movement you get into it and get more out of it. (P7)

Almost all people identified the '*use of imagery'* as having an amplifying effect on enaction. Acting out a particular image that connects to a healthy part of self or one's desired state of being was mentioned frequently:

> Patients conjure images that are meaningful to them that allow them to see self as a connected, holistic and begin moving like that image. They are building a very full picture, which makes them feel like a very full, alive, multifaceted alive person. (P14)

A participant said this experience of kinesthetic imagery allowed her to experience "a tangible sort of hope" (P2).

The last component of enaction was related to the '*externalizing*' effect of expressing one's pain in movement. Participants described that by acting out one's pain with a form of symbolic movement, one may be able to detach self from pain and have an objective point of

view. This, in turn, may bring about a sense of healing. Being able to separate pain from self through externalizing it may allow one to be able to reconnect to one's body in a non-threatening way.

> When you really are able to show exactly it [pain] in movement and get it externalized little bit, get it outside of yourself and show what it feels like and looks like, it can be eye-opening, it can be healing. Usually there's this active sense of decompression and release. (P9)

> Because they are so connected to their pain, they don't want to pay any more attention to their body. So imagery is an access point. (P13)

Emotional management. Participants recognized that DMT actively addresses emotional aspects of people's chronic pain experience and promotes emotional awareness and management. Three components related to this category were identified from the data namely: 'emotional awareness', 'discharge of emotion', and 'increasing positive emotions'.

People shared that DMT may stir up feelings and thoughts that might have been repressed inside; through the principle of authentic movement, individuals may access the unconscious part of self which can bring *awareness and insight* about one's emotional state:

> Movement brings awareness and insight. I think you are using the parts of self that are more instinctual and more spontaneous, perhaps precursors to spoken language, and that could make it easier to connect to those feelings that are deeper and internal. (P2)

'*Discharging emotion'* was recognized as a significant therapeutic factor of DMT related to the healthy management of emotion. 'Getting it out', 'releasing', 'emotional outlet' were some of the initial codes included in this category. Participants described that acting out feelings or simply giving physicality to one's emotional experience has healing effects as it helps people to decompress and resolve the emotional tension that has been built up due to struggles with pain. Participant 13 illustrated this eloquently:

> I have had pain to the extent that I have felt so frustrated because there is this constant firing. And what I want to do is run it out or I want to beat something up to the extent that I can get rid of this. Chronic pain patients may not have the physicality to do that, they may not have the strength or stamina. So we need to be able to at least express how frustrating, saddening and maddening it is. So creating these opportunities of full expression of the emotional components that go with the harboring pain and the trauma if

> you will. I think it's the perfect combination of physicalizing it, getting into this emotional frustration and with the therapist in the room encouraging, fostering and mirroring in doing this with them. (P13)

Another component of DMT related to emotional management was promoting 'positive emotions'. Many participants acknowledged that the expressive and interactive movement experiences characteristic of DMT can generate a range of positive emotions such as joy, fun, peace and calmness, hope, as well as an altered state of flow:

> People might say how old are you? why are you acting like a kid? But you gotta be able to laugh and have fun. You learn to follow your heart and go with what you feel. That acting out the music and dance, that's going to lift. (P7)

> It often times relaxes me and gave me a semi-meditative state, a quasi-flow state. (P9)

In summary, emotional management was identified as one of the therapeutic factors of DMT. The mechanism might be related to facilitating emotional balance through using movement to increase positive emotions and decrease negative emotions. People may also experience a variety of emotions and develop sensitivity to become more aware of one's emotional state.

Integration. This major category was the densest category across the data. All participants spoke about different aspects of integration in some degree. Three patterns of integration were identified, namely 'mind-body connection', 'meaning-making', and 'interpersonal connection'.

Mind-body connection. This category refers to DMT's mechanism of dynamically creating a sense of connection between one's mind and body. All participants recognized that DMT encourages individuals to connect to their once detached body and to form a new and healthy relationship with it. This can be done by addressing not only the manifest, pain related problems but also the underlying psychological issues that need to be worked through such as attachment issues, low self-esteem or maladaptive belief system.

> DMT group stimulate the patients to inhabit their bodies in a different way, new way, with the pain symptoms present, observing themselves from within. (P14)

> Dissociation is a result of underlying difficulties in managing the changes, which have arisen, be they pain-related or more complex issues, reflecting other psychological issues as well. When the pathological processes are transformed, the reconnection of the mind-body-world unity will occur. (P16)

Meaning-making. Finding meaning of pain and transforming the meaning one ascribes to the pain experience were also included in the major category *integration*. Symbolic expression of pain through movement, interpreting its personal meaning, and reflecting one's experience in a narrative structure were described to be helpful in the process of meaning-making.

> . . . . to help somebody enact their narrative over time and to put movement to their history and to their current struggle . . . . through that you may find some meaning that you can work with. If there were a group of people who were struggling and each one has their chance to enact their story and other people have the opportunity to demonstrate the courageousness with which they regard the stories of others, I think that that might help people to be more resilient. (P2)

> Body work and work on "higher" levels of meaning go hand in hand. Reflection and movement, movement and reflection are keys to therapy for these persons. (P16)

Interpersonal connection. Creating meaningful connections with other people, and building social awareness and skills to restore interpersonal relationship were a part of the integration category. Participants stated that DMT provides an opportunity for positive social experiences that can negate the destructive impact chronic pain has in social aspect of individual's life. They included group therapy experiences with other people who are living with chronic pain with whom one may feel a sense of acceptance and understanding. The therapeutic alliance between the dance/movement therapist and the client was recognized as a primary ingredient in restoring the interpersonal connection.

> Patients could then focus on also enjoying the social aspect of being with others with similar ailments. The commonality of the experience is the advantage. . . . benefit of the social aspect in DMT group is of great importance for the therapeutic process. (P14)

> I really do believe that it's really based on the therapeutic person and how their personal is. I think that the relationship is the key part of it. (P12)

Participants described that the positive social experiences one has in DMT motivated them to connect with other people outside of therapy setting. This, in turn, helped decrease social

isolation. One participant stated that DMT provided an environment in which people can safely practice social skills and experiment with their role as a member of a group:

> What role do you have right now in this group and how your role evolves in this group? Start re-constructing it within this group setting and get to know yourself and identity in this group. . . . .and feel how the roles have concretized and then shift that and change that little bit cause in life outside of the group they might not be able to change the roles as much. Maybe here they can have a spontaneity and freedom and capability to switch it and fluctuate back and forth. (P13)

Structural transformation. This last major category relates to the role of DMT in changing one's cognitive framework related to pain and its impact on people's fields of perception. Three patterns of structural transformation were identified namely, 'articulation', 'reframing', and 'widening'.

Articulation. A component of structural transformation identified in the data was articulation of a person's perception about self and pain. Participants described that exploring and expressing one's pain or self-image in movement facilitated the process of articulation at all levels. Examples included differentiating different aspects of bodily experiences besides pain (P16), developing a concrete understanding of what pain feels like (P13, differentiating temporal aspect of pain experience (P16) and being able to separate self from pain (P9). Participant 16 gave an elaborate description of this process:

> Because chronic pain involves a way of being in the world which I have characterized as "disarticulation of the field", the body work performed in body oriented therapies of any kind including DMT should aim at facilitating the process of articulation, at all levels. It may begin at the level of body image and body sensations, that is, to nuance the experience of the body from a "clump" of pain, 'the pain body' to a body which indeed experiences pain, but also relief from pain, transcendence of pain, pleasure, relaxation, relief and so on. . . . The body work also necessarily involves a differentiation of emotions, thoughts and temporal modes, "that was then, this is now". The consequent articulation of the field of perception gives rise to new experiences, feelings and ways of being in the world. These new perspectives widen the possibilities and contribute to breaking the obsessive focus on pain, with the accompanying anxieties and perceptual disarticulation. (P16)

Using symbols or imagery was recognized as a way to support articulation; 'objectification' was the mechanism identified for this process. Many people described that

symbolic or metaphoric movement expression may give one's abstract ideas or the ineffable experience of pain a form, or physicality thereby allowing those to be something concrete and manageable:

> Movement is a great thing because how would that look, what does pain look like and make a movement for it, and you dialogue with it. Then it gets to be! It has permission to be what it is and there is the recognition by others. (P9)

> People have ideas about how their pain looks and feels but they can't articulate it in words all the time. So if they can show it a little bit or if they can describe it in words as best they can what the pain looks like and I try to embody it and they see it in me and "Wow, that's awful! That's how I am feeling all the time? That stinks! Man, I want to shift it." Or "I feel really empathetic towards myself now". (P13)

Therefore, embodying the pain may allow one to have an objective perspective on the subjective experience of pain and support him/her to create a healthier relationship with the pain. Objectifying the pain appears to help one to create a distance from pain, which, in turn, may enable the person to perceive pain as something 'manageable'.

Re-patterning. Participants frequently spoke about the changes in their cognitive framework related to their perception of self, pain and physical capacity. They recognized that this might be one of the significant ways through which DMT may foster resilience factors specific to chronic pain management. Many people described that the joy individuals experience while engaging in movement gradually impacted their previous thought scheme of 'movement = pain' and help them to re-pattern it to 'movement = pleasurable' or 'movement = pain-reducing'. In addition, increased body awareness was related to this category. People described that recognizing the strength and capacity that was still remaining in their body, coupled with refocusing on health instead of disability, helps persons to change specific cognitive structure related to movement and pain thereby reducing the fear avoidance tendency and improving self-efficacy for physical activity.

> It's about re-patterning and re-programming relationship of pain and movement over time. All of sudden over six months, you realize that you are doing much more movement than you used to do and it's become more embodied in you. (P13)

> Creating safe spaces and movements so that the "dangerous" structure can replace the perceptions of danger, perceived both in the body as dangerous sensations and the "triggers" in the world. This gradual transformation from 'dangerous' to 'manageable' will be played out in the therapeutic setting. (P16)

Widening. This category is related to the participants' experience of the openness and diversion of thought and actions. Participants described that while engaging in movement exercises, they first experienced their posture changing toward a more open and expanded position; then they felt their mood being lifted as well as the attention broadening. People reported that the experience of increasing range of movement, trying different ways of moving their body, and engaging in creative exploration enabled them to have a new perspective and become open to incorporating more variety in behavioral patterns as well (P3). One participant described how movement allowed her to move from having a closed, narrow focus on her pain toward a broadened perspective and a sense of freedom:

> You are opening up, it's expanding. You are not just focusing on the pain, you let that go, release. The more you move, the more you are able to move. It will expand and able you to grow, become freer. People, when they are in pain they stay closed but if you allow the time and space, allow a creative expression, you can do more and more. (P7)

Some participants described how movement may widen a person's perception through enabling him/her to be aware of the various aspects of life that might have been pushed into unconsciousness because of the narrowing impact of pain:

> DMT does allow you to access your unconscious and move from a place that isn't cognitively on the forefront of your mind. Your unconscious might be interested in a lot of different things other than pain. There can be a lot of really adventuresome, dreamy ideas or even past experiences that chronic pain patients have had get pushed into their unconscious and that's where they dream from, that's the storage unit for this really awesome experiences that are unlimited. There are opportunities in DMT to move from this place of unconscious mind. (P13)

4.3.5.6 Grounded theory. Through a process of conceptualization of the variables and the relationships between the variables, sorting memos, and drawing diagrams, a grounded theory from interview data and a visual model that depict the theory were constructed.

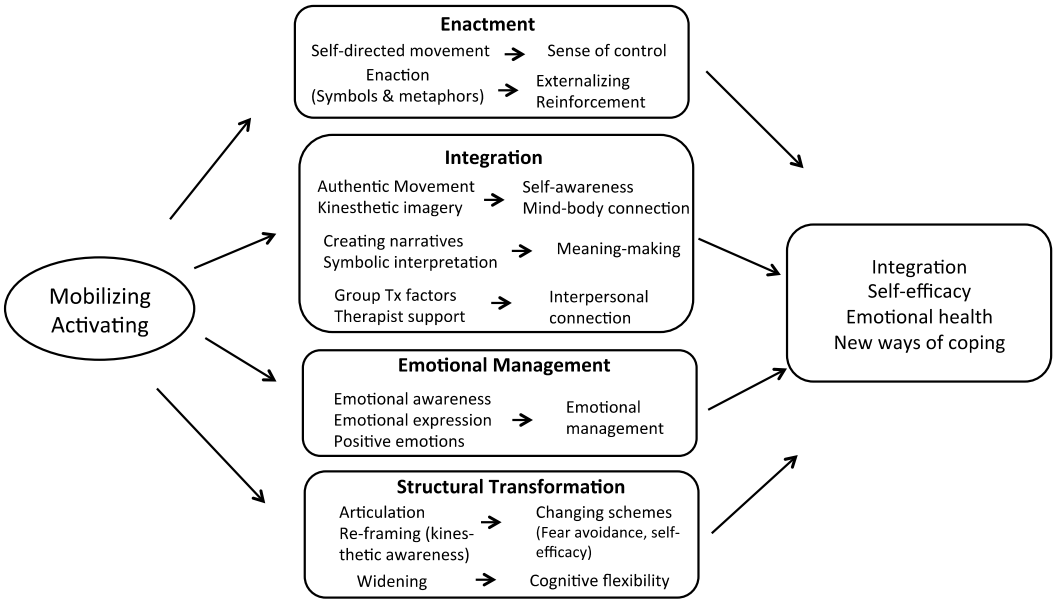


Figure 11. Phase I grounded theory model diagram

DMT may support individuals' process of fostering resilience-promotive-factors through multidimensional therapeutic mechanisms that can target important outcomes in chronic pain rehabilitation. Mobilizing body and engaging in creative and expressive movement explorations becomes a driving force that enables one to loosen up the rigidity at all levels and activates key therapeutic processes. Four key mechanisms are identified, namely enactment, integration, emotional management, and structural transformation. Enactment refers to a process of utilizing spontaneous movement explorations and expressions through which one can feel a sense of control, externalize/objectify the pain, and reinforce treatment goals and positive self-affirmations. Integration refers to DMT's mechanism of bringing a holistic integration of a once split mind and body, finding meaning of pain that can be incorporated into one's life trajectory, and developing social intelligence and skills to connect with others in a healthy way. The clinical encounter/therapeutic relationship was also emphasized as a primary element in the integration process. Emotional management has to do with DMT's mechanism of developing emotional

awareness, providing an avenue to express repressed feelings, and increasing a wide range of positive emotions. Structural transformation is a process of developing realistic understanding about one's body, pain and movement thereby correcting one's cognitive schemes related to one's pain coping behaviors. As a result, individuals may achieve a range of therapeutic outcomes related to resilience such as improved sense of integration, self-efficacy, emotional health, and openness to new ways of coping.

4.3.5.7 Discussion of the findings: DMT factors and mechanisms for resilience building in people with chronic pain. To answer the research question, "What are the factors and mechanisms of DMT in building resilience in people living with chronic pain?" a grounded theory study based on the interview data from 16 people was conducted. The findings showed that the core mechanism of DMT for resilience building in people living with pain is a process of supporting people to find 'new ways of living in the body and being in world'. DMT may support people to go on with life in the best way possible in spite of the adverse effects of pain through providing multidimensional therapeutic mechanisms to counter the multifaceted impact chronic pain has on individuals. Current pain theories acknowledge that pain can be a manifestation of complex interaction of various factors such as biological conditions, psychological disorder, somatization, stress in social relationship, and individuals' subjective interpretation of the meaning of pain, thus emphasizing the need for a biopsychosocial model in chronic pain rehabilitation (Gatchell, 2005; Hyams & Hyman, 1998). The findings of current study showed that DMT's therapeutic mechanisms target the complexity of chronic pain phenomenon; thus DMT may satisfy the principles and treatment goals of the contemporary pain management theory and guidelines.

Participants agreed that the most fundamental therapeutic mechanism of DMT lies in the healing power of movement. Mobilizing individuals' body allows people to get in touch with and more present in their body; this experience of embodiment can subsequently act as a driving force for multiple therapeutic processes at all levels. This is consistent with Goodill's (2005)

description of Systems theory in DMT as “the sensed, kinesthetic, and motoric connections between cognitive process, emotional responses, interactional patterns” (p.16) taking place in the course of therapy.

Four key mechanisms were identified namely enactment, emotional management, integration, and structural transformation.

First, the category enactment highlighted DMT’s unique strengths, which is being a self-directed and strength-based therapeutic modality that actively utilizes the self-actualizing power of one’s action (Koch & Fischman, 2011). This is important as chronic pain often results in the perception of one’s body, emotions, personalities and life being taken over by pain, making people feel as a ‘victim’ who passively endures it (Jackson, 1994.) Sheets-Johnstone (2010) stated “movement indeed is the basis of our experience of ourselves as capable and effective agents in the world” (Sheets-Johnstone, 2010, p.123). This suggests that a movement-based therapeutic approach can be particularly useful for treating people living with chronic pain. The findings from this study indicate that DMT indeed actively utilizes this potential of movement to target the issue of control and self-agency in people with chronic pain. Second, emotional management was another key mechanism. Since affective factors are closely associated with individuals’ pain experience (Flor & Turk, 2011), maintaining emotional health is emphasized as an important part of chronic pain management (Craig, 1999). The findings from this study are consistent with previous studies that explained DMT’s role in promoting emotional health by decreasing negative emotion and increasing positive emotions (Dibbel-Hope, 2000; Krantz, 1994; Mannheim & Weis, 2006; Serlin et al., 2000). In addition, the findings suggest that unique characteristics of DMT as an embodiment-based psychotherapeutic intervention can help individuals not only to express or vent emotional energy but also to ‘work through’ or process those feelings (Levy, 1988). Through this experience, people can improve their ability to cope with emotional aspects of pain.

Third, integration was identified as a key therapeutic mechanism. The findings also suggest that one of the main therapeutic mechanisms of DMT in building resilience for people living with chronic pain is related to one of DMT's fundamental principles, namely to restore a person's wholeness and integration. In their study with chronic pain patients, Gorham and Imus (1999) concluded that DMT can facilitate patients' integration of mind and body by helping them to stop fighting their body's experience and accept one's body and pain. Christie (2006) also reported that DMT might help people to regain a sense of 'being in the self' (p.43) regardless of physical pain. These aspects were present in the current study. Another aspect of integration was recognized as a process of meaning-making. The participants identified that DMT encourages individuals to recognize and utilize one's body and movement as a means through which meanings can be created (Levy, 2011). Through the experience of embodied reflection, people may encounter cognitive, affective and intuitive knowledge (Pelias, 2008) about self, pain, as well as one's identity. The category integration included the significance of restoring social connections in DMT process as well. The study by Bojner Horwitz and colleagues (2003) identified that the majority of participants in their study reported having a history of relational trauma (i.e., sexual abuse). A participant from the current study who is a dance/movement therapist also emphasized that most of her clients with chronic pain struggle with attachment issues and said she believes that there is a strong association between the relational issues and chronic pain. Chronic pain's destructive impact on social aspect of individuals such as the issue of validation, social stigma, or social isolation is widely addressed in the literature (Avery, 2008; Korula, 2008; Morley, 2008). Considering these conditions, it is significant to note that restoration of interpersonal connection through safe, accepting, and trusting relationship was recognized as one of the core therapeutic mechanisms of DMT for treating people with chronic pain in this study.

Fourth, structural transformation included various patterns of cognitive restructuring in DMT process namely articulation, reframing and widening. Ample evidence has been provided in

the literature regarding the effect of people's cognitive framework (i.e., pain appraisal, perceived control, catastrophizing, etc.) on the experience of pain including pain intensity, tolerance, coping, depressive symptoms and disability (Arnstein et al., 1999; Bandura et al., 1987; Borsbo et al., 2008). The findings of this study indicate that DMT may have an advantage over verbal psychotherapeutic treatment in terms of transforming cognitive structures since the above mentioned effects (noticing, widening, articulation, and reframing) are experienced not only at a conceptual level but also at the bodily level. Embodied mode of awareness, learning, and practicing may reinforce the process of re-patterning or brain plasticity (Van der Kolk, 2006).

Lastly, the findings indicated that DMT might have a positive impact on sense of integration, self-efficacy, emotional health and openness to new possibilities. These outcomes correspond with outcomes recognized as significant in chronic pain rehabilitation and resilience throughout the literature (Karoly & Ruehlman, 2006; Keefe et al., 2004; Morley, Davies, & Barton, 2005; Stewart & Yuen, 2011; Turk & Okifuji, 2002).

4.3.6 A Meta Model – Substantive Model

The formative model, generated from the literature, and the reflexive grounded theory model, developed from patient and provider interviews, were compared, combined and integrated into a meta-model. When comparing the two models I noticed that all of the key concepts identified in the formative model were present in the grounded theory model. Since the grounded theory model provided more detailed components of some of the concepts and the relationships between the concepts, I was able to integrate the formative model into the grounded theory model with minimum revisions. The contents of the revisions are described below:

- Addition of the concept 'loosening up' after 'mobilizing/activating' as a subsequent factor that facilitates other key therapy processes
- Placement of therapeutic relationship as a larger factor that acts as a container or therapeutic environment in which the key processes can take place
- Addition of 'sense of agency' as one of the main therapy outcomes

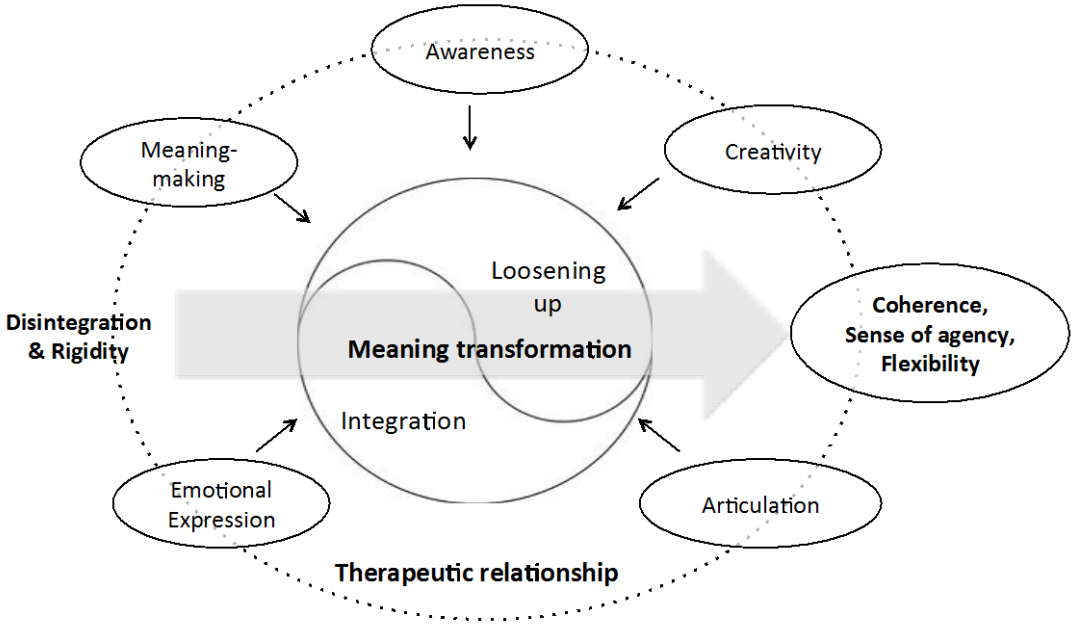


Figure 8. Formative model diagram

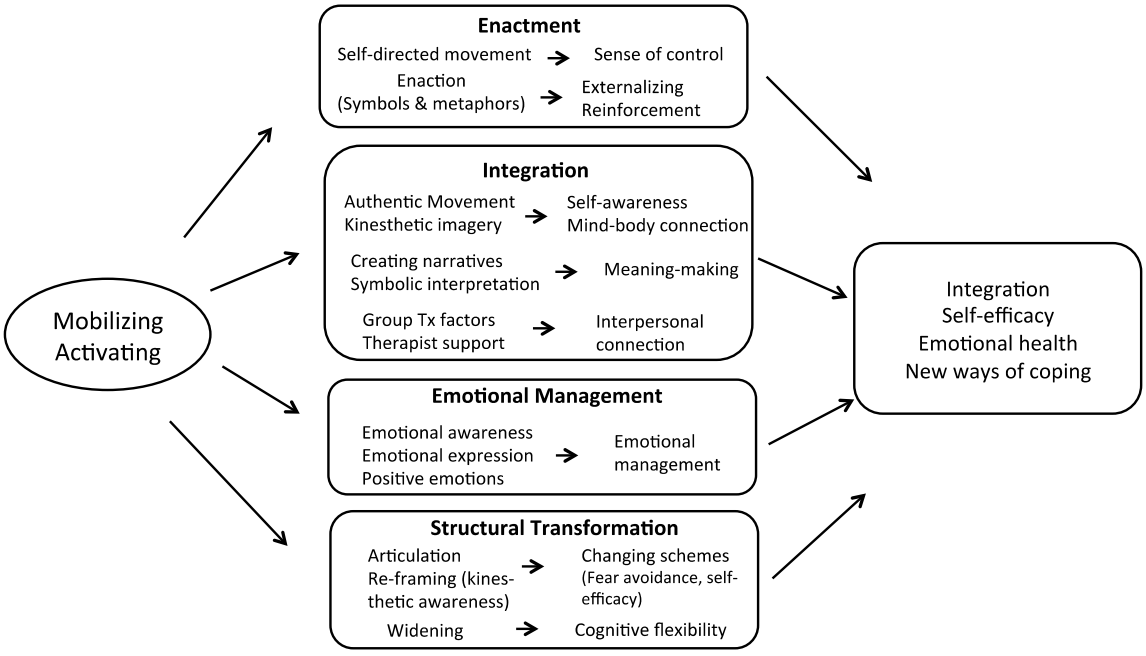


Figure 11 Grounded theory diagram

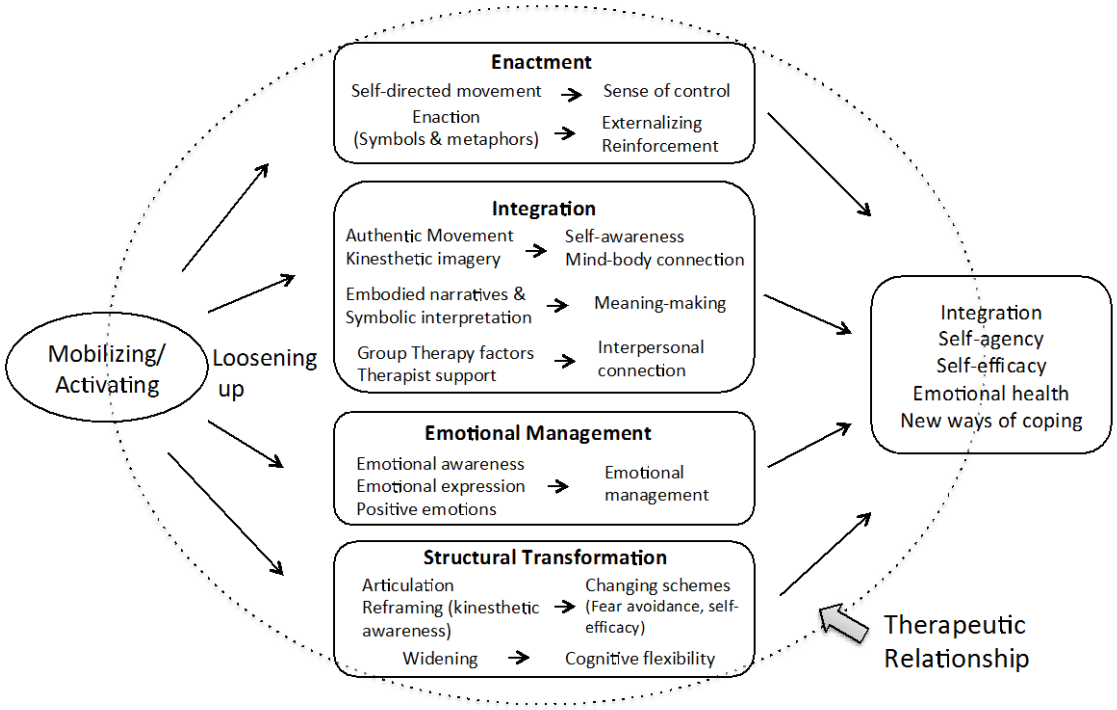


Figure 12. Meta-model from Phase I

The final meta-model from phase I displayed above depicts the therapeutic factors and mechanisms of DMT for resilience-building in people living with chronic pain that were identified from a formative model developed based on the literature and a reflexive grounded theory model developed from the interviews. The model shows that DMT may target some of the significant psychosocial issues that people living with chronic pain experience via multidimensional therapeutic mechanisms. The key mechanisms identified in this model include a) enactment - utilizing the effect of self-directed movement for individuals to feel a sense of control, to externalize/objectify pain through symbolic expression and imagery, and to reinforce the therapeutic goals or positive self-affirmation by enacting those concepts; b) integration – facilitating a sense of connection and coherence by helping people to experience their mind and body as a holistic unit, to find meaning of pain that can be incorporated into one's life trajectory, and to connect with others in a healthier way; c) emotional management – providing opportunities

to experience emotions, develop emotional awareness and ability to work through one's emotions, safely express negative feelings, and increase positive emotions; d) structural transformation – enabling people to widen their scope of movement, attention, emotional awareness and interpersonal relationships, and to change their cognitive schemes related to their body and its physical capacity by developing a realistic understanding of self and pain.

Movement is identified as the primary factor that activates people to move from a rigid state of mind, body, and emotions toward a more open, mobile and flexible state, which may facilitate the above mentioned processes to take place. Another important therapeutic factor is the therapeutic relationship between the therapist and the clients in which one feels acceptance and safety to be oneself and engage in a process of self-exploration and healing. As a result of experiencing the dynamic therapeutic processes in DMT, people strengthen some of the resilience resources - integration, self-agency, self-efficacy, emotional health and new ways of coping. This in turn can support them to better cope with adverse effect of chronic pain and go on with life the best way possible.

CHAPTER 5: PHASE II. CONFIRMATORY PHASE INTERVENTION, MODEL TESTING, AND REFINEMENT

5.1 Objective of Phase II

During phase II, the substantive model developed from phase I was tested and refined. Twenty people with chronic pain participated in a 10-week group DMT intervention aimed at building resilience. The processes and outcomes of this intervention were investigated both qualitatively and quantitatively in order to test the variables and the relationships between them that were identified in the phase I substantive model.

5.2 Overview of Method

For this phase, I used a convergent parallel mixed methods design in which "the researcher collects and analyzes both quantitative and qualitative data during the same phase of the research process and then merges the two sets of results into an overall interpretation" (Creswell & Plano Clark, 2011, p. 77). For the quantitative strand, a one-group repeated measures design was used with three measurement time points using standardized instruments as well as weekly pre and post-session questionnaires to examine the effect of DMT treatment. For the qualitative strand, participants' journals and transcripts from the post-treatment interviews were analyzed (See Figure 5).

Below, I will first describe the setting, participants, and recruitment procedures for the phase II study. This will be followed by a detailed description of the 10-week DMT intervention. I will then describe the qualitative data collection and analysis procedures, findings, and discussion of the findings. Subsequently, I will discuss the quantitative data collection and analysis procedures, findings and discussion of the findings. Next, I will integrate the quantitative and qualitative findings. Finally, the phase II model will be presented.

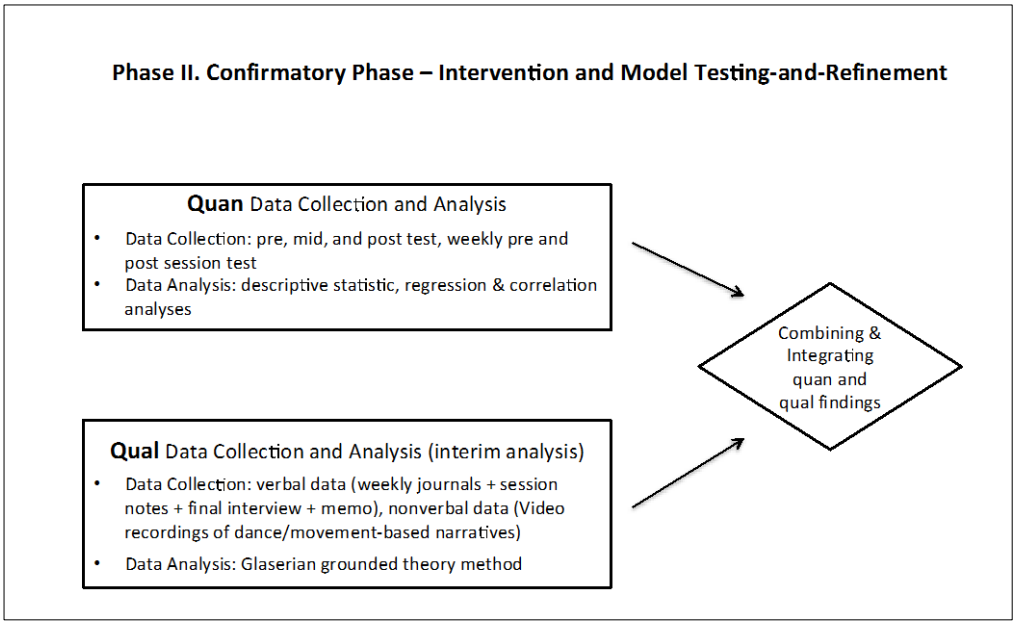


Figure 13. Phase II design diagram

5.3 Setting, Participants and Recruitment

5.3.1 Setting and Participants

The phase II DMT mixed methods study took place at two locations over the span of four months in 2014, namely the Stephen and Sandra Sheller 11th Street Family Health Services (11th Street) of Drexel University, and the NeuroMusculoskeletal Institute (NMI) of Rowan University.

The Stephen & Sandra Sheller 11th Street Family Health Services of Drexel University is a nurse managed, federally qualified health center in North Philadelphia that provides healthcare services to over 5,000 adult patients annually. It is located in the 11th Street Corridor, a neighborhood of 20,000 (90% African-American) that has been designated by the federal government as "medically underserved". Most patients (80%) at 11th Street suffer from at least one chronic disease, and approximately 50% of patients seek treatment for chronic pain. DMT sessions took place at a large multi-purpose classroom in the facility. This room is a private space where group privacy was protected. The NeuroMusculoskeletal Institute of Rowan University School of Osteopathic Medicine in Stratford New Jersey offers rehabilitation services to patients

with both acute and chronic pain. DMT sessions took place in a large classroom on the third floor of the University Doctors Pavilion building.

This study recruited a convenience sample of 25 adults living with chronic pain. The sample for the phase II was comprised of wholly different people from the phase I. Nineteen people completed the 10-week group intervention. The following inclusion criteria were used: (a) age 18 years old or older; (b) a diagnosis of chronic benign pain with a duration of at least 6 months; (c) proficient in English; (d) willingness to engage in moderate dance and movement activities, and able to stand and move around without assistance; and (e) agreement not to seek additional therapies beyond those already included in their current treatment regimen for the duration of the study. In addition, the following exclusion criteria were applied: (a) pregnancy; (b) serious depression or other psychiatric disorder that may prevent compliance and productive participation in group DMT sessions such as schizophrenia, other psychotic disorder, borderline personality disorder, or antisocial personality disorder; (c) compensation for chronic pain related problems or involvement in impending litigation or judgment for disability worker's compensation (e.g., because of concern that documented pain reduction may adversely affect legal or disability status and might, therefore, inhibit such individuals from reporting improvement in pain); (d) current alcohol or drug abuse; and (e) physical activity restrictions as prescribed by their physician that limit engaging in a moderate movement-based intervention like DMT.

5.3.2 Recruitment

The study was advertised via posters and flyers at the research sites. Participants were also recruited by referrals from staff at the research sites and healthcare providers in the greater Philadelphia area. Staff members were informed about the intervention and study protocol, potential risks and benefits, and inclusion and exclusion criteria. When potential participants contacted me, I screened them for eligibility using the above mentioned inclusion/exclusion criteria.

5.3.3 IRB Approval

IRB approval for this study was obtained from both Drexel University's IRB and Rowan's IRB before the start of study recruitment for this phase II study.

5.3.4 Baseline Visit

Eligible individuals were invited for a baseline meeting during which I explained the study details and obtained informed consent. During the informed consent process, the participants were informed of the purpose, procedure, risk/benefits, and confidentiality measures of the study for which they were volunteering. The individuals were asked to read and sign the informed consent form (Appendix B) and complete a demographic information survey (Appendix C) that included: age, sex, marital status, employment status, type of pain, pain intensity, and types of primary pain management method. This information was collected to prepare a profile of pain conditions and demographic characteristics that might affect response to group DMT for resilience. The participants at 11th Street were divided into three groups depending on their scheduling preferences and the people at Rowan NMI were all assigned to one group.

5.4 DMT Intervention

The study included four treatment groups: three groups at 11th Street and one group at NMI. The participants partook in 10 weekly 70-minute DMT sessions. There was sufficient open space for group movement activities and the privacy of the group was ensured at both study sites. I led all DMT sessions. I am a board-certified dance/movement therapist and have experience in providing DMT as a treatment for people living with chronic pain.

5.4.1 Structure and Contents of DMT Sessions

Although the theme and types of activity for each session varied, the overall structure of each group DMT session was as follows: 1) verbal check-in and movement warm-up; 2) main activities; 3) cool-down; 4) journaling; 5) group discussion; and 6) closing.

5.4.1.1 Check-in and warm-up. I began each session by inviting the participants to sit in a circle to briefly ask about how their week had been, and how they were feeling mentally and physically on the particular day. Then I led a semi-structured body movement warm-up consisting of gentle movements such as deep breathing, stretching and mobilizing different body parts. The purpose of the warm-up exercise was to a) increase the participants' in-the-moment awareness of their physical and emotional state; b) release physical tension or emotional stress; c) mobilize each body part to prevent injury; and d) prepare the participants' mind and body for the main DMT activities. The findings from phase I indicated that 'loosening up' one's mind, body and emotion is an important mechanism of DMT for chronic pain; thus I focused on utilizing warm-up process to help people to experience a dynamic sense of relaxation to release tension in all levels and ready for the main activity.

In addition, "Connection dance" was used as a part of the warm-up throughout the study period. "Connection dance" is a series of movements that were choreographed for this study; it is aimed at facilitating body coordination and integrative movements. It is a modified form of Brain dance™ which is based on the concepts of the six connectivities in the human body as suggested by movement specialist Irmgard Bartenieff. The "Connection dance" was introduced to the participants during the second treatment session and used in the subsequent sessions. I made a video recording of myself performing the "connection dance" and created a private link on the YouTube, which was only shared with the research participants so that they could watch and practice it at home.

5.4.1.2 Main activity. After the warm-up, I introduced the main movement-based activities that were pre-designed to address various topics related to the participants' experience of chronic pain and resilience based on the findings from phase I. I utilized several key DMT techniques that might support the therapeutic processes identified in the model. These included: an applied form of *authentic movement,* in which the mover engages in a improvisational free-style dance/movement while the therapist and/or other group members witnessed the mover

(Adler, 2007); *mirroring*, a technique in which typically two individuals engage in a synchronous movement interactions in which they reflect not only each other's body attitude, form or quality of movement but also the perceived internal state of the partner (Sandel, Chaiklin, & Lohn, 1993)*; enactment or role-playing*, in which individuals act out their thoughts or emotions in movement, or act as if he or she is another person; *kinesthetic imagery*, which involves active visualization of thoughts or feelings and moving to or with the specific imagery; and *creating and performing movement-based narratives*, which will be explained in detail in the following section.

The above techniques were utilized during the sessions for the following reasons. According to the findings from phase I, *Authentic movement* may promote a person's sense of connection between their mind and body. It has been reported that individuals suffering from pain for a long time often develop a tendency to dissociate their thoughts and feelings from their body as a defense mechanism (Leder, 1990; Osborn & Smith, 2006). This may cause not only a sense of disintegration in self, but also difficulty in interpersonal relationships. By engaging in spontaneous movements that are led by one's inner impulse, and having an experience of "being moved" rather than "moving", individuals may be able to focus on the relationship between mind and body and may feel an enhanced sense of connectivity between their mind and body. The substantive model suggested that interpersonal connection is a significant mechanism in the therapy process. The *mirroring* technique was used to increase awareness of and insight into self and others through means of kinesthetic empathy. When two people move together as they embody and reflect not only the physical characteristics or quality of movement but also the affect and inner state of one another, they may become more sensitive to other people's non-verbal language and become a better communicator. Moreover, mirroring exercises may improve an individual's level of awareness towards his or her own movement patterns, habits or emotional state by seeing, recognizing, and re-experiencing the characteristics of oneself being reflected in others. This may also help people with chronic pain to feel accepted and understood by others,

while they increase understanding of other people's (e.g., family and caregivers or colleagues) views or needs at the same time, thereby improving the overall quality of their interpersonal relationships.

The findings from phase I indicated that symbolic expressions and acting out images could help people to objectify pain and reinforce therapeutic goals. Therefore I encouraged participants to actively utilize imagery and enact symbols or metaphors related to their thoughts or feelings related to the pain experience, thereby facilitating them to concretize their experiences, externalize pain, find meaning, and gain an objective perspective on their experience of pain.

These movement activities were designed to increase the participants' awareness of their body and movement; to explore, identify and express their emotions; to recognize existing thought patterns and coping skills; to practice new ways of thinking and coping; and to facilitate interactive communication and group cohesion. It is important to note that the implementation of the techniques outlined above and all movement activities were designed to target specific resilience-promoting factors that had been identified in phase I. In addition, my clinical knowledge and understanding of the literature related to DMT were incorporated in the process of designing the intervention. A summary of the themes and activities for each week's session is provided in the table below.

Table 8. DMT session contents

Wk	Themes	Objectives	Activities
1	• Tuning into body (Body awareness and body image)	1. Orientation to the group and the program 2. Articulating body parts and examining body image	• Going over group rules and safe space statement • Introducing self with movement • Warm-up while moving body parts in isolation and as a whole • Creating a visual self-portrait and then expressing it through movement

2	• Breath and Flow • Making Connections I: Connecting to Self	1. Increase a sense of connection to body and emotion through breathing 2. Experience body as a dynamically integrated and holistic unit	• Learning 3-dimensional breathing • Learning and exploring 6 connectivities within one's body; i.e., breath, core-distal, head-tail, upper-lower, body-half, cross-lateral (Bartenieff, 1980) and the psychological concepts related to each connectivities • Learning the "connection dance" sequence
3	• Awakening Senses • Movement Narrative I	1. Increasing awareness of six senses and shifting from objectifying to embracing self and body as a subject 2. Creating & performing a movement narrative	• Various improvisational movement focused on the exploration of six senses– visual, auditory, olfactory, touch, taste, and proprioception (I see, I feel, I hear..) • Creating & performing a movement narrative 1 - "My story of self in pain"
4	• Spatial concept in movement: Kinesphere & Boundaries	1. Recognizing the concept of personal space and boundary in various contexts - physical, psychological, & interpersonal relationship 2. Expand the movement repertoire in space and broaden awareness	• "My Bubble" - Exploring one's movement repertoire in relation to a various space elements and broaden the scope of attention and movement • Exploring the interactive space: moving in space with others, becoming aware of one's proximal preference and experience dynamic use of interpersonal space • Focus training (internal and external, being present)
5	• Symbolic Expression • Kinesthetic Imagining	1. Objectifying pain through symbolic expression and identifying personal meaning of pain 2. Showing the pain and building empathy	• Creating a visual symbol of pain and expressing it into a movement representation • Partner work: 1) Acting out how one's pain looks/feels like 2) having a partner to imitate and embody one's pain and observe it; and 3) create a movement response toward one's own pain re-enacted by the partner
6	• Connecting to Emotion • Communicating Emotion	1. Identifying, differentiating and expressing various emotions 2. Modulating and managing emotions	• "Today I feel…..": expressing one's emotional state through physical movement • "Masks"- exploring different emotions and expressing them in dance & movement • "Ocean of emotion" – projecting feelings to the weather in the ocean and moving with a prop (a large blue stretch cloth) according to the particular emotion with different intensity
7	• Making Connections II	1. Increasing sensitivity to nonverbal	• Shaping exercises and contact improvisation

	Interpersonal Relationship	communication 2. Building relationship through movement interactions 3. Fostering group cohesion and support	• A various mirroring exercises
8	• Movement Qualities & Coping Skills	1. Leaning different movement qualities and its implication in coping skills 2.Recognizing personal movement preference/patterns and expanding movement repertoire	• Learning and experiencing Laban's 8 movement elements (i.e., Efforts- Flow, space, weight, and time) and its psychological implication • Imagery based exercise: imagining one's body as being made of different materials (rubber band, marshmallow, wire, feather, water, wood, fabric etc.) and moving to the imagery
9	• Creativity & Play • Movement narrative II	1. Fostering spontaneity and ability to improvise 2. Creating and performing a narrative	• Movement improvisation (authentic movement) • Dancing with 4 elements (air, fire, water and earth) • Creating and performing an autobiographical poem "I am"
10	• Reflection, Integration, & Closure	1. Integrating the past themes and group experiences to establish a sense of accomplishment and conclusion 2. Reinforcing a sense of community and hope	• Debriefing and sharing thoughts • Learning and performing a group circle dance – "Peace dance"

An essential component of the DMT intervention was the participants' partaking in creating and performing *movement-based narratives.* Narrativization is considered a critical way through which individuals with chronic pain can create reflection, find meaning and understand their pain experience, thereby serving as an important part of finding a sense of wellness within illness (Ressler, Bradshaw, Gualtieri, & Chui, 2012). Using a narrative feature in conjunction with movement expression was also mentioned in the phase I findings. In this study, two forms of movement-based narrativization were employed as a part of the main activity.

Two movement-based narratives were created at two different time points (3rd and 9th week). It was expected that by week 3, participants' potential anxiety about expressing oneself through movement in the presence of other people would be lessened. In these two narrative-making sessions, participants were asked to choreograph a short movement-based narrative in which they narrated a story of self in relation to their pain trajectory. I provided an underlying structure for the narratives and had the participants choreograph creative movement expressions based on the given framework.

Narrative #1. The first movement-based narrativization was about creating and performing a story of self in relation to their pain experience with respect to time. Since one of the essential characteristics of narratives is to have a temporal component within, the structure of the movement-based narrativization was designed in a chronological order –past, present and future. This format was adapted from an existing dance-based exercise that was designed and applied by a dancer/choreographer Bill T. Jones who had led dance-based workshops for patients with terminal illness (Moyers, 1997). The instruction for this narrativization was, "Please choreograph a story about yourself in relation to your pain experience through dance and/or movement expression focusing on the following four time points – 1) the time before you had the pain condition; 2) the time you first started to develop the pain condition; 3) the present; and 4) the imagined future. At the end your story, finish it with a still pose like a statue in a museum that shows how you would like to be remembered by others. ". The participants were informed that the narrative would be performed in front of the other participants in the group.

Figure 14. The structure of the movement narrative I

The participants were asked to find a space in the room where they could concentrate on the individual process and create the narrative in 15 minutes. When completed, they were asked to first practice the choreographed piece on their own, and then to perform it in front of the other group members, while the rest of the group members witnessed the individual's performance. After performing and watching everyone's narrative performance, the participants were asked to write a journal about their experience of creating and performing a movement narrative as well as witnessing others'. Participants were then asked to gather together to share their thoughts and feelings about the experience. All the performances were video-recorded for use in post-intervention interviews with each participant.

Narrative #2. The second movement-based narrativization exercise was done in the 9th week. This time, the narrativization was structured around a format of an autobiographical poem. Participants were asked first to complete a fill-in-the-blank type poem titled "I am". The script was a modified from a well-known self-filling type poem "I am" (author unknown). In addition, I incorporated four concepts from Sanctuary Model® (Bloom, 2009) within the scripts of the poem, namely safety, emotions, loss, and future (S.E.L.F). S.E.L.F are suggested to be fundamental domains that have to be addressed in all healing process according to the Sanctuary model. I believed that each domain from S.E.L.F is relevant to pain rehabilitation principles and psychological resilience; thus each domain was integrated into the verses of the poem (e.g. "Because of the experience of living with pain I've lost _____"). When finished with writing, the participants were asked to choreograph dance/movements for each verse they had written. Each person presented the choreographed poem in front of the rest of the group members and all narrative performances were video recorded for review during the exit interview (See Appendix D for the poem).

5.4.1.3 Cool-down. I brought the main activity process to an end by gathering the participants in a circle and leading a series of movements consisting of gentle stretching and deep breathing exercises.

5.4.1.4 Journaling. At the conclusion of the main activity, participants were given about 5-10 minute to journal about their experience. The instruction was to "write about your experience from today's session. What did you learn about your self and/or others through today's session? Please write about any thoughts, feelings, physical sensations and new discoveries you had during the session."

5.4.1.5 Group discussion and debriefing. After journaling, the participants gathered to discuss any significant thoughts or reflections they wanted to share with the group members. The purpose of the journaling and group discussion was to enable participants by verbally processing their movement experiences and internal reflections, to process the physical and emotional experiences cognitively and gain new insight and understanding about themselves and others; this, in turn, may have lead to changes in their thoughts, feelings or behaviors.

5.4.1.6 Closure. I led a movement-based closing ritual to bring the session to an end. This was done in a circle while the participants were guided to follow a sequence of movements and deep breathing designed to help them feel centered and grounded and to prepare them to transition to their daily routine.

Each DMT session was video recorded. The video-recordings of the DMT sessions were transferred from the camcorder to an encrypted external hard drive immediately after each session. Once the data were backed up, the files were deleted from the camcorder. The hard drive was stored in a locked secure cabinet at each research site during the treatment period, and then transferred to a locked cabinet in the department of Creative Arts Therapies at the end of the treatment period. Explicit consent for video-taping the sessions was obtained from all participants.

5.5 Qualitative Strand

5.5.1 Objectives

The qualitative research questions for phase II were:

- What are the factors and mechanisms of dance/movement therapy in building resilience for people living with chronic pain?
- What is the experience of people with chronic pain as they participate in a 10-week group dance/movement therapy?

5.5.2 Design of the Qualitative Strand

To get qualitative answers to the above question a grounded theory study approach (Glaser & Strauss, 2009) was used for the data collection and analysis processes.

5.5.3 Data Collection

Qualitative data were collected from four types of sources: a) weekly journal by participants about their experience of participating in each DMT session, b) post-treatment individual in-depth interviews with participants about their experience of partaking in the 10-week group DMT intervention, c) participants' responses to reviewing the video recordings of the movement-based narratives, and d) the reflective writings by the dance/movement therapist (e.g., session notes and memos).

5.5.3.1 Weekly journal. At the end of each DMT session, participants were asked to briefly write about their experience of participating in the particular session. They had an option of doing free-style writing or answering four semi-structured questions. The questions were:

1) How did/do you feel about your body and your self?
2) What have you noticed/learned about yourself or others today?
3) Are there any specific thoughts or feelings about yourself or others that came up during the session? If yes, please describe.
4) Please write about any other observations or reflections about today's session.

The answers were transcribed into an excel document and analyzed soon after the session to enable *theoretical sampling*, which is a process of data collection for generating theory whereby the researcher jointly collects, codes, and analyzes the data and allows the analysis of

initially collected data to inform future data collection (Strauss, 1987). The information and lessons learned from these journal writings guided me in modifications of session content for the next DMT session as well as to formulate questions to ask during the post-treatment interviews.

5.5.3.2 Post-treatment in-depth interview. Upon the completion of the 10-week DMT intervention, I met with individual participants for about 60 minutes. During this meeting, a semi-structured, open-ended, in-depth interview was conducted. Individuals were asked to describe their experience of participating in DMT sessions, and if/how it had affected their ways of coping with pain. The questions and probes aimed to yield in-depth responses about the participants' behaviors (what the individual has done), opinions/values (what the individual thought about the topic), feelings (what the individual felt), knowledge (the fact about the topic), and sensory experience (what the individual has seen, heard, smelled or touched) (Campion, Campion, & Hudson, 1994). (See Appendix C for the list of questions) All interviews were audio recorded.

5.5.3.3 Video interpretation. All DMT sessions and group discussions were video recorded. Two specific videotaped DMT session fragments, namely the two movement-based illness narratives from session 3 and 9, were used to elicit qualitative data during the post-treatment meeting. At the end of the meeting (i.e. following the interview described above), each participant and I watched the video recording of the two movement-based narratives performed by the specific participant together. After reviewing each narrative, the participant was asked to describe his/her thoughts, emotional reactions, discoveries, or opinions (s)he had while watching the film. I also asked them if they noticed any differences between the two narratives. I furthermore asked questions related to certain movement expressions that, in my clinical opinion, seemed to be significant to understand and clarify the meaning of it. The participants' interpretations of their own movement narratives were audio recorded, transcribed, and included in the qualitative data set. I also wrote my own observation and interpretation about the

movement, as well as my emotional reaction toward the movement narratives in theoretical memos.

5.5.3.4 Researcher's reflective writings. I wrote session notes after each DMT session to keep record of the session structure and contents, particular group themes, significant comments the participants made, as well as my personal reflection on each session. Theoretical memos (memos about ideas or concepts related to the developing theory) and procedural memos (memos about methodological aspects of the study) were also created in the course of the data collection period to refine and keep track of ideas as they developed, and to name concepts and relate them to each other (Glaser, 1998).

5.5.4 Data Storage and Security

Following the interview and video interpretation, the recorded audio file was transferred onto a secure computer as described before. After transcription of the audio file, the audio file was permanently deleted from the computer. The de-identified interview transcription was saved on a CD and stored as permanent records of the research in a locked cabinet in a locked office in the Department of Creative Arts Therapies at Drexel University, in compliance with IRB regulation.

5.5.5. Data Analyses

Qualitative data collected through various sources (weekly journals, post-treatment interview transcripts, session notes, and memos about emerging concepts and theory) were analyzed by grounded theory procedure. Glaserian grounded theory method was used as a guiding principle for the procedure. (Glaser, 2007, 2013; Glaser & Strauss, 2009) The collected data were imported into a qualitative data analysis software Atlas ti. for data management and analysis.

5.5.5.1 Open coding. Codification of the text data started by 'open coding' in which I carefully looked into the raw data line-by-line to first gain a general feel of the data, and started generating codes everyway possible (Strauss & Corbin, 1998). This involved reading every comment each participant had made and considering them to find similarities between concepts.

These concepts were then coded according to their meaning and relevance to the research questions. I began to identify concepts, patterns, processes and emerging categories. The categories began to accumulate, and those that were most dense became major categories. I went back and forth across data while comparing, modifying, and sharpening the growing pattern, which is known as a process of *constant comparison.* During this process I used memos to reflect and conceptualize the data, which helped me to develop hypotheses and a substantive theory. Constant comparison process continued until there was no new concept emerging (data saturation) and all the major categories had become apparent.

5.5.5.2 Selective coding. Once initial major categories were identified, open coding was halted and I sought for the core category that "explains the most of the variation which represents the participants' major concern and the focus of this study?"(Glaser, 2007). After identifying the core category I started delimiting coding to only those categories that are relevant to the core category in sufficiently meaningful ways. The main analytic process in selective coding was to integrate and refine the major categories to form a larger theoretical scheme so that the findings take the form of theory. Therefore the focus was on refining and integrating the major categories, exploring the inter-and intra-relationships of the categories and then generating hypotheses and theories to bring insight into the process of resilience building through DMT experience in people living with chronic pain.

5.5.5.3 Memos and Diagrams*:* Throughout the data collection and analysis process, I wrote memos and drew diagrams about emerging ideas and findings. Different types of memos - code notes, theoretical memos, and procedural memos- were written to record the products of analysis and provide directions for analysis. Code notes contained the analytical product from three tiers of coding: open, selective, and theoretical coding. Theoretical memos were written whenever a new idea or relationship was found during the coding so that I could concentrate on creatively generating ideas about the data and develop the idea (Urquhart, 2001). In procedural memos, I kept any procedural reminders or ideas. Diagrams were drawn as often as possible to

visualize the relationship between categories and to enable non-linear conceptualization of the ideas, providing a different vantage point from which to view the developing theory (Kawamura, Ivankova, Kohler, & Perumean-Chaney, 2009).

5.5.5.4 Theoretical coding*:* Once the saturation of categories and properties were reached, I moved on to theoretical coding during which I tried to conceptualize the interrelations between the categories and sought for the theoretical code – "code that conceptualizes how the substantive codes will relate to each other as interrelated multivariate hypotheses in accounting for resolving the main concern" (Glaser, 1998, p.163). Conceptual mapping, sorting memos and artistic exploration (creative processing of the data through drawing and movement exploration) assisted in identifying the theoretical code and constructing a visual representation of the model.

5.5.6 Validity/Legitimation for the Qualitative Arm

Trustworthiness or plausibility is the qualitative equivalent concept for the quantitative concept of validity (Miller, 2006). Validity assessment in qualitative research means checking whether the information obtained through the qualitative data collection is accurate (Creswell & Plano Clark, 2011). Among many approaches aimed at increasing trustworthiness of the qualitative findings, three strategies were used in this study namely triangulation of data drawn from several sources, peer debriefing, and rich and thick description. For triangulation, the evidence for codes and themes was built on various qualitative data sources such as participants' weekly journal, researcher's session notes and theoretical memos as well as in-depth interviews. Peer debriefing was utilized by asking one committee member to code sections of text data to establish the inter-coding reliability, obtaining feedback on the emerging model diagrams and concepts from a colleague as well as committee members, and brainstorming with them during the process of interpretation and integration. Thick and rich descriptions for the emerging theory were provided to achieve transparency of the process and rationales.

Trustworthiness can be also strengthened by exploring negative cases that can add more

varied and sophisticated dimensions of the phenomenon (Glaser, 1978). Negative case analysis involves examining the cases of individuals who appear to be the exceptions in the research (Lincoln & Guba, 1985). Exploration of these cases can help a researcher to identify the differences and incorporate them into the model, which can strengthen a grounded theory model by providing the flexibility and variation (Strauss & Corbin, 1998). This was done in this study through conducting a secondary analysis of the qualitative data thereby identifying contextual conditions related to the exceptional/negative findings. Negative or discrepant findings were included in the results.

To increase the likelihood that the theory developed in a study is truly grounded in the data and participants' experiences, member checking should be used. Unfortunately in this study, member checking was not conducted due to the limitation of the study time frame.

5.6 Qualitative Findings

5.6.1 Participants Information

5.6.1.1 Demographic characteristics. A total of 19 people completed the study. However only 17 people were able to participate in the post-treatment interview; two people could not participate in the interview due to a health condition. For those two people, only journal writings are included in the qualitative data analysis. All 19 people completed three time-point quantitative measurements. The majority (84%) of the participants self-identified as female. The average age was 51.9 years (SD = 8.8); the age ranged from 38 to 68 years old. The majority of the participants (72%) self-identified as African American. The following table displays the demographic information in detail.

Table 9. Demographic characteristics of the participants for each group

Variables	Group A	Group B	Group C	Group D
Institution	11th Street	11th Street	11th street	Rowan NMI
Number	6	6	4	3
Mean age	49.2	50.8	57.3	52.3
Gender				
Female	66.7%(4)	83.3%(5)	100%(4)	100%(3)
Male	33.3%(2)	16.6%(1)	0	0
Race				
Asian	0	0	0	33.3%(1)
African-American	100%(6)	100%(6)	50%(2)	0
White	0	0	25%(1)	66.7%(2)
Pacific Islander	0	0	25%(1)	0
Marital status				
Married	0	50%(3)	50%(2)	100%(3)
Separated	16.7%(1)	16.7%(1)	50%(2)	0
Never been married	66.7%(4)	33.3%(2)	0	0
Widowed	16.7%(1)	0	0	0
Work status				
Employed	16.7%(1)	0	100%(4)	66.7%(2)
Unemployed	0	16.7%(1)	0	0
On disability	66.7%(4)	83.3%(5)	0	0
Retired	16.7%(1)	0	0	33.3%(1)

5.6.1.2 Pain characteristics. The average duration of pain was 9.4 years with minimum of 2 years to maximum of 35 years (SD = 10.1 years). Participants' pain duration and pain etiology are presented in Table 10. Average pain percent and pain intensity are displayed in Table 11.

Table 10. Pain duration and diagnoses

Pain duration	% (n)	Pain Etiology	%(n)
Under 3 years	21% (4)	Arthritis	36.8% (7)
4 -7 years	49% (9)	Fibromyalgia	15.8% (3)
8 – 14 years	10% (2)	Neuropathy	10.51% (2)
15 – 20 years	10% (2)	Lupus	10.5% (2)
Over 30 years	10% (2)	Unknown	26.3% (5)

Table 11. Average pain percent and pain intensity

Average pain % (0 – 100%)	%(n)	Pain intensity (1-10)	%(n)
40	5.3% (1)		
50	15.8% (3)	**1-2**	0
60	5.3% (1)	**3-4**	21% (4)
70	10.5% (2)	**5-6**	36.8% (7)
80	26.3% (5)	**7-8**	26.3% (5)
90	21.1% (4)	**9-10**	15.8% (3)
100	15.8% (3)		

5.6.2. Identifying the Core Category and the Theoretical Code

After doing open coding for the first couple of interviews I started to look for the core category with questions "what is the core variable that explains the most of the variation which represents the participants' major concern and the focus of this study?"(Glaser, 2007) "What is a theme that was mentioned most frequently emphasized, and related to by the participants?" (Jones & Alony, 2011). As I continued coding and reviewing the memos I had been writing alongside, I was able to see the overarching themes across the data, which were *feeling in charge, recognizing self-efficacy for pain management* and *restoring normality*. The first concept I developed was *regaining control* and I proceeded with the selective coding which was a process of paring down the original list of categories through delimiting coding to only those variables that are meaningfully related to the core category. As a result, I was able to reduce them to around 13

categories that were most relevant to the core category and the research question. They include ‘person factors’, ‘structural factors’, ‘ physiological benefits’, ‘loosening up and breaking free’, ‘self-agency’, ‘connecting to self’, ‘connecting with others’, ‘reframing’, ‘emotional intelligence’, ‘resilience’, ‘in-control’, ‘integration’, ‘readiness to engage with outer world’, and ‘integration’. From these, 4 major categories were formed, namely ‘facilitating factors’, ‘mobilizing’, ‘regaining control’ and ‘therapy outcomes’. Through completing the selective coding stage, saturation of the categories and properties was reached.

Table 12. Major categories, categories and codes identified from data

Major Categories	**Categories**	**Properties**	**Codes**
Facilitating Factors	Structural factors	Environmental factors	Novelty of the setting
			Music and rhythm
		Session structure	Self-directive structure
			Optimal level of challenge
	Person factors	Peer support	Peer recognition
			Mutual inspiration
		Therapist support	Therapist support
			Therapist quality
Mobilizing	Physical benefits	Physical outcomes	Invigoration
			Reducing fatigue
			Flexibility/range of motion
			Pain reduction
			Better breathing
			Strength
			Coordination and balance
	Loosening up & breaking free	Loosening	Release
			Relaxation
			Mobilizing
			Flow
			Warming up
			Expansion of movement repertoire
		Breaking free	Getting ‘un-stuck’
			Transformation
			Breaking out/hatching
			Freeing
Regaining control	Activating Sense of Agency	Self-fulfilling action	To move is more
			Enactment
			Instilling hope
			Kinesthetic imagery
			Meaningful action

Table 12 -continued

Regaining control	Activating self-agency (Continued)	Practicing spontaneity	Self-motivation
			Feeling in charge
			Moving at free-will/ Not being forced
			Creative/Improvisational movement
		Self-efficacy	Finding strength
			Accomplishment
			Mastery
			Self-esteem
			Efficacy for physical activity
			If I put my mind to it, I can do anything
			Control/power over pain
			Positive self-evaluation
			Doing as much as I can
			Overcoming challenges
		Separating self from pain	Use of Imagery
			Symbolic expression
			Kinesthetic imagery
			Articulation
			Objectification/Externalizing pain
	Connecting to self	Mind-body connection	Enactment
			Being in touch with body/integration
			Body awareness
			Body Connectivity
			True to self
			Breathing
			Moving to the music
			Kinesthetic imagery
			Mindfulness
		Autobiographic integration	Temporal reflection
			I've come a long way
			Perspective of self in the future
			Hope for the future
			Identity reflection
			Appreciation for the current condition
			Meaning making
	Connecting to others	Resetting Normality	I'm not the only one
			If you can do it, I can do it too
			Sense of belonging
			Validation
			Seeing and being seen
			I can be normal
			Acceptance
		Group cohesion (Group therapy factors)	Bonding/ connection
			Joy of moving together
			Sharing experience
			Here-and-now focus
			Empathy
			Self-disclosure
			Non-judgmental
			Kinesthetic empathy
			Feeling safe & Trust
			Encouragement

Table 12 -continued

Regaining control			Role
			Camaraderie
			Care and support
			Interpersonal learning
			Decreasing isolation
	Enhancing Emotional intelligence	Emotional management	Expressivity
			Releasing negative emotion
			Emotional awareness
			Finding serenity within
			Stress management
			Communicating feelings
			Kinesthetic empathy
			Self-disclosure
		Broaden-and-build effect	Joy and happiness
			Hope
			Having fun/playfulness/humor
			Peace and Calmness
			Gratitude
		Broaden-and-build effect (Continued)	Relaxation
			Inspiration
			Mood improvement
			Self-love
			Freedom
			Love and care
			Pride & Satisfaction
			Spirituality
			Widening attention
			Expanding/diversifying movement
			Finding strengths
			Finding positives in negative situation
			Opening up
			Creativity
			Altered state (flow)
			Learning
			Enlightenment
			Recognizing options
			New ways of doing things
	Reframing	Articulation	Body articulation
			Temporal articulation
			Separating self from pain
			Objectification
			Symbolic expression
			Meaning making
			New perspective
		Reappraisal	Pain reappraisal
			Reappraisal of personal efficacy for physical activity
			Re-patterning pain = movement link
			New perspective
Therapy outcome	In-control	Being in charge	Motivated for one's health care
			Empowerment
			Self-manage symptoms

Therapy outcomes	In-control (Continued)		Self-initiative
		Ability to Self-practice Transfer skills	Home exercise
			Self-help tools
			Making it a routine
			Practice skills
			Connection dance
			Alternative pain management
			Generalizing/transferring skills
			Time for self-care
			Self-initiative in
	Integration	Acceptance	Acceptance of pain
			Doing as much as I can do
			Making peace with my body
			Recognizing improvement
			Restored normality
			Self-help tools
			Autobiographic integration
		Emotional health	Feeling whole/integrated
			Better attitude
			Not-bottled up
			Feeling open
			Hopeful
			Better expression and communication
	Readiness to connect with outside world	Connecting to the community	Seeking resources in the community
			Joining new classes
			Continuing the group connection
			Ability to communicate needs to family & friends
			Socializing more
	Resilience	Resilience outcomes	Do it ‘in spite of’
			Resuming physical therapy
			Resuming exercising
			Utilizing coping skills
			Hope
			Reduced fear avoidance
			Power over pain
			Moving forward
			Plasticity/flexibility

The final step of analysis was theoretical coding which is a process of integrating the fractured pieces of data together and conceptualizing the interrelations between the categories. Cutliffe said, “Theoretical code usage places the most demand on researcher’s creativity” (as cited by Glaser, 2013) and is often a difficult process. Finding a theoretical code seemed indeed to be a challenging process and it took me a couple of attempts to identify the final theoretical

code. I took Cutliffe's advice and decided to utilize creative modes of contemplation besides traditional method of sorting memos, namely conceptual mapping, a series of artistic inquiry through creative dance/movement and drawing, and exchanging ideas with my mentor. What helped me the most in this stage was doing creative movement and visual art exploration of the data and the relationship between the core category, sub-categories, and the emerging theoretical code. An attempt to conceptualize the theory through improvisational movement exploration brought me insight and clarity about the concepts and the key mechanisms. One of the outcomes of this process was the discovery of an overlooked core variable that later integrated into the core category, which was the concept of *breaking free* or *getting out of the "stuck-ness*". It came from the kinesthetic sense of the experience first and then I was able to connect the concept with a visual image of a sculpture "Freedom" by Zenos Frudakis (Frudakis, 2001).

Figure 15. *Freedom* by Zenos Frudakis (Permission for reprint obtained from the artist)

Other outcomes include visualizing the initial model diagram and refining the theoretical code. Through combination of the process of drawing multiple versions of diagrams, going back

to data and sorting memos, and brainstorming with mentors, the final name for the core category and the theoretical code were consolidated namely *breaking free and regaining control,* and *embodied hope*. Engaging in the creative mode of conceptualization enabled me to acquire a kinesthetic understanding and insight on the participants' experience.

5.6.3 Secondary Analysis in Search for the Contextual Conditions

After completing the initial data analysis, I ran a brief secondary analysis to identify some of the contextual conditions under which the phenomenon occurs. To this end, I first created a table that illustrates the distribution of each theme identified from the initial analysis by matching them with each participant's data (Table 13). As explained earlier, only 17 people participated in the post-treatment interview, thus for the secondary analysis, only the data from 17 people were included.

From looking at this table I was able to identify the themes that were most frequently encountered across the interviews – 'physical outcomes', 'group cohesion', 'broaden-and-build effects', 'self-application/transfer skills', 'autobiographic integration', and 'person factors', as well as the ones that ranked low – 'self-fulfilling action', 'articulation' and 'connecting to community'. It also informed me which participants' data covered all the themes identified and which person's data did not include certain themes.

Table 13. Secondary analysis table 1

Major categories	Categories	1	3	4	5	6	7	9	10	11	13	14	17	18	19	21	23	25	%
Facilitating factors	Structural factors	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	88
	Person factors	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
Mobilization	Physical outcomes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
	Loosening & breaking free	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	88
Self-agency	Self-fulfilling action	X	X		X	X				X	X	X	X	X	X	X	X	X	76
	Practicing Spontaneity	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	88
	Self-efficacy	X	X	X	X	X	X	X		X	X	X	X	X	X			X	82
	Separating self from pain	X	X			X				X	X	X	X	X	X	X	X	X	71
	Self-application transfer skills	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
Connecting to self	Autobiographic integration	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
	Mind-body connection	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	88
	Acceptance		X		X	X	X	X	X	X	X	X	X	X		X	X	X	82
Connecting to others	Normality	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	94
	Group cohesion	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
	Connecting w/community	X	X		X		X	X	X		X	X	X		X	X		X	71
Emotional intelligence	Emotional management	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	94
	Broaden-and-build effect	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	100
Reframing	Reappraisal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	94
	Articulation	X	X		X	X	X			X	X	X	X	X	X	X		X	76
Total (%)		95	100	71	90	95	86	81	76	95	100	100	100	90	90	86	71	100	

Table 14. Percentage of the themes reported by the participants

Percentage	Factors
100%	Person factors, physical outcomes, self-application/transfer skills, autobiographic integration, group cohesion, broaden-and-build effects
94%	Restoring normality, reappraisal, emotional management
88%	Loosening up and breaking free, mind-body connection, self-efficacy, structural factors
82%	Acceptance
76%	Self-fulfilling action
71%	Articulation, separating self from pain, connecting to community

It was important to learn why some people did not experience or report certain themes and what conditions might be linked to these phenomena. To this end, I subsequently searched for some common characteristics shared by participants who demonstrated similar patterns of mentioning certain themes. This was done by creating a 'persona' for each participant, which was a brief profile of individuals' unique characteristic information. I wrote brief narratives about each person based on the data from demographic survey, interview scripts and the information I had obtained from participants through personal communications during the study sessions. A sample persona is provided below.

K is a 45 years old African American female. She has diagnoses of fibromyalgia and osteoarthritis, and has been living with the condition for about 10 years. K experiences pain 90% of time and takes two kinds of medication 3 times a day from which she gets about 10% of relief. She is overweight and has high blood pressure. She rarely exercises and has a sedentary life style. Her primary pain management is doing meditation and resting in bed.

She is currently on a disability and lives by herself in inner city Philadelphia. The highest education she received was the 11th grade. She has never been married but has a 23 years old son who is in jail right now. She visits him once a week. She is experiencing a lot of stress because of her son's situation but does not have close family members or friends whom she can receive support from. What helps her to cope with the stress is praying and meditating. However since joining the DMT study, she feels that she has found a new way to deal with her pain and stress. She thinks that participating in this group helps her to relax mentally and physically, reflect on herself and learn useful skills. She often comes to the group feeling sad and depressed but feels uplifted after every session. She especially appreciates the fact that the people in this group make her feel accepted, cared for and understood. She feels like she has made some new friends and hopes to continue doing things together with these people. In fact, one of the women from the group suggested joining a cooking class together at a local community center. Since K has been using some of the techniques learned from the study at home, she feels like she can build herself up to try physical therapy again.

Upon the completion of the dance therapy study, she was invited to an interview session to tell the researcher about her experience of participating in the treatment. She has trouble staying focused when answering the questions. She often forgets what the question was in the middle of trying to answer the question. She has been experiencing difficulty with memory and describing what she thinks or feels with right words.

I created a table that summarized the salient characteristics of each participant based on the information I learned from these persons as well as the participants' demographic survey.

(The table is not included in the dissertation because this table displayed detailed demographic information that might compromise confidentiality.) This allowed me to compare and contrast differences in their characteristics (i.e., education, severity of pain condition, ability to articulate, social support, other life stressors, etc.). This was a process of sorting and sifting – separating out findings into subsets according to specific participant characteristics. Based on the information from this table, specific contextual conditions of the participants were identified for some of the factors. I did this, for example, by first identifying the participants who did not mention a certain theme from Table 13; second, by examining what kind of demographic or circumstantial conditions those people had in common by looking at the table with detailed demographic information; third, by identifying how these common characteristics were different from the rest of the study participants; and fourth, by creating a separate table that summarized these characteristic factors. The findings of these particular factors will be described within the reporting of each category. The overall summary of the contextual conditions (i.e., the contextual conditions that appeared to be related to a number of factors, characteristics of people who had mentioned the highest % of the themes and people who had the lowest %) will be reported at the end of the results section (Section 5.6.4.2.8 Contextual factors).

5.6.4 Thematic framework of the resilience-building process through DMT for people with chronic pain

In this section, descriptions of the four major categories – ‘mobilizing’, ‘regaining control’, ‘facilitating factors’ and ‘resilience/therapy outcomes’, and their properties are given with supporting quotations.

5.6.4.1 Mobilizing. The major category ‘mobilizing’ was recognized by participants as a central element or a catalyst that facilitated the various dimensions of therapeutic effects of DMT to take place. When probed to explain which aspect of DMT had contributed to some of the changes they had experienced, the majority of the participants answered that it was ‘the

movement itself'. The codes related to the movement and mobilizing formed two categories namely, 'physical benefits' and 'loosening up and breaking free'.

5.6.4.1.1 Physical benefits. The first category under *mobilizing* was 'physical benefits'. There were numerous comments related to the 'physical benefits' category. All participants described that they had experienced some level of physical outcomes from participating in the DMT treatment. These included 'invigoration', 'reduced fatigue', 'increased flexibility', 'bigger range of motion', 'better coordination', 'improved balance', and 'feeling stronger' as well as 'pain reduction'.

> "I felt very energized and healthier at the end of our session . . . . I felt stronger and more vibrant. . . . I was much more invigorated and felt so much happier so the drive to home was not as nearly as hard. I didn't go faster but I made it home happier." (C3, i.e., Participant from group C, number 3)

> "With me, it's not just the migraine but there is also arthritis and osteoporosis and a lot of stuff going on, and you feel stiff and don't feel like moving. And doing something like this, you actually realize that moving actually makes you feel better because it helped with some of my pain. So that's what you need to do, to move more not less." (D1)

Participants explained that the kind of movements they experienced in DMT and the way they performed these movements were distinct from those in other physical exercises or mind-body based practices. They attributed the difference of DMT to the fact that they got to participate in physical activities at free will and felt free to do as much as they could:

> "Sometimes I pop in Pilates tape or yoga . . . some things I can do but if I can't do certain things, I can get so frustrated and angry. But when I came here . . . we focus about what we 'can' do. Instead of beating myself about what I couldn't do, I just think about what I can do and I just do it." (B4)

> "I go to physical therapy and even tried yoga class, but that was too much on my body so is all the exercises at thy gym. I can't do it like regular people. I think it's more physical when you go to the gym, tightening up your muscle or losing weight, things like that whereas yours was more an activity, it's fun and not a job." (A4)

People recognized that the physical benefits they experienced in DMT were connected to and influenced by the changes in other domains – cognitive, emotional, and social. One

participant spoke about his understanding of how DMT works at the mind-body level as well as incorporates social experiences and positive emotion:

> "It's [DMT] different in a bunch of reasons. Physical therapy you are trying to get your arm and hand working again, but the therapy we do here I think is more about your mind to try to teach you that there are different and better ways to cope with your pain. You don't have to depend on the medicine because you can do your breathing, relax and meditate… knowing that you can get your mind right to help get the rest of your body right. Even though the pain is always going to be there, there is definitely something you can do to cope with it. It was also fun!" (B6)

One woman illustrated an example of how she experienced a physical movement connecting to a particular imagery, which, in turn, brought about awareness of her thoughts and emotions related to a current life circumstance she was struggling with. This helped her to gain insights into the situation and experience a sense of peace:

> "So it was a physical thing that you can connect to mentally. It was when we were doing the air and water and everything and moving with that imagery. It sparked that whole train of thought of how life is an ocean with ups and downs. I physically have swam in the ocean and felt the power of all that, and applying it to the mental or emotional side of life . . . . it was very similar. So that was like 'oh I can relate all aspects!' That was a big lesson, because the more I think about it, everything fits for me . . . . I feel like I am under a huge amount of stress and the whole house is in turmoil. I am just such a fragile mass. But the imagery that we went through that time was like … 'well, just like those big waves, it will pass!' One way or the other it will pass and it has to. So it was comforting to experience that." (D2)

The above example demonstrates how movement may help an individual not only to connect with his/her thoughts, feelings, and memories but also impact or transformation experiences or thoughts within these domains.

5.6.4.1.2 Loosening up and breaking free. The second category under *mobilizing* was 'loosening up and breaking free'**.** The ideas of 'loosening up' and 'breaking free' were implied in participants' accounts when participants were describing the impact of the DMT treatment. 'Loosening up' is related to the releasing of physical and psychological tension and rigidity toward mobilizing body, activating life energy and discharging negative emotions. 'Breaking

free' refers to the experience of a meaningful insight, sense of freedom from a negative state, or transformation that people had reported.

Even though these concepts were used to describe the effect people had experienced at all levels - physical, emotional, cognitive and social, participants' narratives suggested that the process started first and foremost at the bodily level. People felt that movement allowed them to loosen up the physical stiffness toward being 'relaxed', 'flexible', 'invigorated', and opening up to new ways of moving.

> "I think the movement itself actually helped whether it was stretching or flowing…. the physical aspect of it . . . . the slow, flowy, soothing and therapeutic movement that we did here. . . . It felt like it was loosening up or it was moving in a different way that it hasn't before."(D3)

> "Dance helped me to free the body from stiffness. Movement broke the ice to move more" (B1)

Some people described this state of increased mobility and vigor with expressions that imply both physical and psychological meaning such as 'freeing' (C1), 'a release' (B5), 'unblocking' (C4) or 'flowing' (B1).

> "It's like it flows. It's like I get this big knot back here, so I still have some pain but energy is not blocked in one place. There is a flow . . . . It's almost like having your car lubricated or oiled. It's like a soothing fluid. It's like blocked and clots but when you do the movement it makes everything flow. Your thought flows . . . ." (C4)

> "Coming to this research group and exercising, was just keeping my mind free because it was a release. You are releasing the pain out of your body, releasing the negative emotions . . . . with the movement, you release it and let it go." (B5)

Another concept that was often identified in the data was 'breaking free' from a negative state toward a sense of freedom or moving forward. Participants often portrayed the overall experience of living with chronic pain with metaphors that implied a state of confinement or restriction such as, being 'stuck' (B6), 'trapped' (D2) or 'bottled up' (A3). This state was also described as not having a proper perspective on the situation one is in. The DMT experience allowed them break off/out of this state an to move toward a more open, free and insightful state

of being, such as having a ‘freedom’, ‘new/proper perspective’, ‘sense of control’, ‘growth’, ‘healing’, and readiness to move forward in life. The following quotes illustrate how this was experienced:

> “The movement gives you hope. It helps you to get out of the ‘stuck-ness’ or the state of not having a proper perspective about your situation, giving you an opportunity to have a different perspective.” (C4)
>
> “. . . . that’s all part of kind of seeing yourself in a different way, and to break out of that mold that you’ve been in, it’s the very thing that can be very healing for you.” (D3)
>
> “It was like a baby chick bursting out of the shell. Like you are in this egg and you don’t even know that you are in there until certain point of time you are realizing that you are growing and then you burst out of that shell. That’s how the body and movement was. I was in a shell and didn’t want to do anything but once I came out of the shell life was more clear. (B2)

There were two people who did not mention the loosening up or breaking free factor. Both of them had never had an experience of engaging in physical activity that is loosely structured and expressive. Another factor they both agreed on was the limitation of therapy dose and length:

> “It got better but I can’t say that I was 100% comfortable with that because I am not a dancer or naturally athletic or graceful any of that. So I was always klutzy. I think you will become better with more time.” (D1)
>
> “I think It’ll have to be more than once a week and more than 10 weeks for me to see any more significant changes.” (D2)

In summary, the data indicate that the participants in this study recognized the ‘movement/mobilizing’ act as a primary condition and force for various therapeutic processes to occur. Three aspects of mobilization were identified. First, people experienced various physical benefits from participating in the DMT treatment such as invigoration, relaxation, flexibility and pain reduction. Second, DMT enabled people to ‘loosen up’ the rigidity and confined state of mind and body to feel a sense of flow and release at all levels. Third, this led them to experience a sense of ‘breaking free’ from feeling ‘stuck’ toward a sense of freedom and hope to ‘move on’ with their lives.

5.6.4.2 Regaining control. ‘Regaining control’ was identified as the core therapeutic process of DMT. There were four patterns through which individuals regained control over pain and their life, namely ‘activating self-agency’, ‘connecting to self’, ‘connecting to others’, ‘reframing’ and ‘enhancing emotional intelligence’.

5.6.4.2.1 Activating self-agency. The data indicated that the experience of participating in DMT had a significant impact on activating a person’s sense of agency, a perception that one is initiating, executing, and controlling one's own actions in the world (Jeannerod, 2003). Almost all participants agreed at some level that DMT helped them to feel an increased sense of agency. Four categories were identified as related to an individual’s process of activating self-agency namely, 1) practicing spontaneity 2) increasing self-efficacy 3) separating self from pain, 4) and self-fulfilling action.

Practicing spontaneity. The first category in *activating self-agency* was ‘practicing spontaneity’. The participants attributed the experience of engaging in the session activities ‘at free will’ (C1) as the main reason for their improvement in self-agency. They perceived that there was freedom and openness within the session structure in which they felt in charge about making decisions on type of movement, movement intensity, and when to stop to take a break if needed. Many people commented on how this ‘non-forceful’ (B5) or ‘not being pressured’ (B1) condition motivated them to spontaneously engage in the activities:

> “I’m motivated because I didn't have someone saying, “You didn't do that one right, or do it a little longer, or reach it a little higher. Push it, do it harder!” in this class. Well it's nice to have someone encouraging, but then my mind tells me I'm being forced. I know it sounds strange, but that makes me to be self-motivated, and feel like I’m in charge.” (B2)

> “You gave us guidance as to what you wanted us to do but we had freedom to express ourselves in our own way. It was better cause not everybody could do all the movements in yoga or things like that . . . . with yoga, I felt like I couldn't really keep up and I didn’t really get much out of it. So I gave up.” (D1)

Because DMT respects individuals’ personal limits and encourages them to practice their autonomy, participants felt more in charge of monitoring their own energy and pain level and regulating the quality and intensity of their movement. Moreover, ‘moving at free will’ inspired

them to spontaneously challenge themselves and push their own limits by trying to move more, bigger or in different ways.

> "Because there was no forcefulness. You do what you can. I guess it's a different mindset and being more in control with your body . . . . wanting to do better, wanting to work a little harder, wanting to feel better . . . . I learned that I can set a limitation about what I'm going to do and how long I can do it." (B5)

Participants' frequent comments and emphasis on this theme indicated how being driven by intrinsic motivation as opposed to feeling demanded by external pressure can be particularly important for someone living with chronic pain when it comes to the willingness to engage in physical activity and its impact. The following quotation by participant C1 provides an example of how one might experience the self-agency during a movement exercise:

> ". . . . the power to make it [making different shapes in movement] the way I wanted to… whatever shape the way I wanted it to be, that's the way I can make it to be. That took power for me to do that, and took my mind to work with it to see what I wanted to do . . . . to make my pain smaller, or larger. . . . So it was a power for me to be able to touch and make my own shapes . . . . I am in control. I might have to take a pill a day, but in my mind I am going to keep it to the small thing so it doesn't get out of control. That's the type of things I was thinking during that exercise. It was the power you've given me over the pain."

Self-efficacy. Increasing self-efficacy was the second theme in the larger category 'Activating self-agency' and it was frequently implied in participants' descriptions. Self-efficacy is strongly linked to the process of activating self-agency. People expressed that their experience of participating in the study helped them to feel more confident about their ability to manage pain and to believe that they can 'make it' (B1) or have 'power over pain' (C1). There are some factors related to the increased sense of self-efficacy such as sense of 'accomplishment' and 'mastery', and 'recognizing personal efficacy for physical activity'.

Throughout their participation in the intervention, individuals felt a sense that they 'have accomplished something', which allowed them to positively evaluate their capacity and strengthen personal belief on their ability to manage pain and related symptoms. The following quotations illustrate the participants' experience of feeling accomplished:

> "It's the feeling that 'I did this today, I accomplished something!' I am also proud of myself because I got up and did this in front of the group." (C3)

> "At the end of the class you feel good. 'Oh, I just did that!' So then I start telling myself 'You see, you can do anything you want to if you try. Don't be scared.'"(C2)

For some, the sense of accomplishment was experienced as a result of being able to achieve a particular goal or simply being able to complete the entire 10-week intervention.

> " I learned that if I put my mind to it, I could do anything. Even at my age. I am 68. Just coming here every week from my house. I said, 'Well if I can walk from my house to catch the bus for 10 weeks, I can do anything.' And the more I came here the more I walked to that corner without having to stop so many times like I did before. I am so proud of myself even for that" (A2)

> "I feel very good about myself because I've accomplished something. I accomplished the way I feel now because before I didn't know how I was feeling because I was in so much pain. Now that I can express myself in movement I can actually feel myself. . . . I just feel much better now that I can express myself." (A3)

Some exercises gave them an opportunity to reflect on the accomplishment they had made in the past and draw a sense of hope from that:

> "It also made me think that if I put my mind to it, I can do anything . . . . realizing what I've done, how far I have come along, and what I have accomplished… it made me think about what my body can do still and to think that I can do it" (B4)

It appeared that one of the conditions that supported people to feel a sense of accomplishment was the 'optimal level of challenge' perceived about the movement tasks by the participants. Because the movements were considered as 'gentle', 'easy enough' and 'not too strenuous', they did not feel intimidated to participate and were willing to try different activities offered without reservation throughout the intervention period.

> "Physical therapy or other workout classes are more strenuous because you just are doing exercises but dance and movement is easy and fun to do. It's active but relaxing." (B5)

One particular activity participants mentioned frequently related to this theme was the 'connection dance' which was a choreographed set of movements they were taught as a part of warm-up routine. Learning the movement sequence and repeating it throughout the overall study

period gave them a chance to practice and master the sequence, allowing them to feel a sense of mastery and accomplishment.

Another important factor related to the increase in self-efficacy was 'recognizing personal efficacy for physical activity', which was mentioned by every participant to some degree. While engaging in the movement activities, they were often surprised by their own physical capacity. People repeatedly spoke about their realization on how much more movement they could do than they had thought.

> ". . . . Cause I didn't know I could raise my legs this high because my hips hurt real bad. So I didn't think I could do that, but I realized I actually can raise my legs, and when I did it, it actually made me feel much better, and I enjoyed myself." (A5)

> "Because I used my body and tried out different moves and I could see that I was still very capable of dancing and moving and doing things that I may not have thought I was before. . . . it made me to realize I still have flexibility and I can still do a lot." (C3)

There was also a strong link between recognizing one's efficacy for physical activity and the process of reappraisal, which will be, discussed more in detail in section *5.6.4.2.5*.

There were three people who did not report self-efficacy. Table 15 shows the 6 common characteristics that they all share.

Table 15. Common characteristics of the individuals who did not mention self-efficacy

ID	% of time in pain	Pain duration	Activity level	Engagement in the psychotherapeutic aspects of the Tx	Social support	Other life stressors
	80-100%	5-10 yrs & over 15yrs	Low to medium	Low to medium	Low to medium	Identified
10	X	X	X	X	X	X
21	X	X	X	X	X	X
23	X	X	X	X	X	X
	100%	100%	100%	100%	100%	100%

The table demonstrates that the common characteristics these people share included having lived with the condition for a long period of time and having high pain prevalence (80-

100% of time in average). Their activity level was on the lower side and the ability to engage in the psychotherapeutic aspects of the treatment (which was determined by my personal impression of the participant's ability/tendency to connect the session activities to personally meaningful therapeutic processes based on their journal writings, interview scripts, and within session discussions) was also low. In addition, they had insufficient social support while dealing with other life stressors besides coping with pain (i.e., family crisis). According to Table 15, the other people in the group who did mentioned self-efficacy tended to show diversity in terms of the degree of these characteristics (e.g., having less % of time in pain, high activity level).

Separating self from pain. The third category under *activating self-agency* was 'separating self from pain'. The ability to 'separate oneself from one's pain', 'obtain an objective perspective on the pain experience', and 'find meaning or define the relationship between self and pain' appeared to be an important part of one's process of strengthening the internal locus of control. The separation/distancing/detachment phenomenon was related to individuals' ability to objectify one's pain through a process of active use of imagery.

Participants described that by 'acting out' their pain or expressing their pain-related thoughts or feelings through movement symbols and metaphors, they were able to project the pain outside of themselves and look at it or examine it more objectively. This process of externalizing and objectifying pain appeared to be linked to a unique way of actively using imagery combined with meaningful action related to the particular image, called kinesthetic imagining.

The 'use of imagery' was a prevalent theme throughout the data. However, participants frequently referred to a specific movement exercise they participated in as relevant to the process of objectification. In this exercise, participants were asked to 1) come up with an image of self and pain, 2) act out the image in front of another participant, 3) watch one's own action replicated by the partner, and 4) react toward his/her partner in movement as a response (a technique

adopted from a dance/movement therapist, Sherry Goodill). Some of the metaphorical images the participants used to represent the self-image or pain include:

- An image of the whole body tied up with a rope
- Being pinned under a 'massive rock'
- Having 'blockages' in multiple spots in the body
- Pain felt as a 'volcanic explosion' or 'electronic shock'
- Pain felt as 'thousands of knives stabbing' one's body part
- Pain represented as a 'nasty alien' living in one's body

The process of identifying the image, acting out how it feels, seeing the movement representation of one's own pain enacted by another person, and reacting toward it, allowed the pain-related ideas or sentiments that had been existing as an abstract perception take a 'concrete form'. The following quotes illustrate how participants experienced the externalization and objectification of pain:

> "I was doing this [showing a motion] one time to describe how the migraine feels like. I think it helps because you express it instead of internalizing it. Have some expression for it rather than keeping it locked inside." (D1)

> "When you make a shape describing who you are, by you making that shape you are also letting others to see and know your pain. They are also describing their pain so that you can see. So the pain becomes sort of visible and it does give you a better perspective . . . . it takes your mind to a whole different space where as though your focus is not all inside, on your pain." (A1)

Being able to externalize and objectify their pain or their emotional reaction to it helped the participants not only to be able to face and accept it as a reality (self-validation of pain), but also to gain a sense that they can manage and cope with it better. The following description by a participant sums up this process eloquently:

> "Well, pain is so subjective that when you could act it out, dance it out, or put it into movement or put it in any kind of concrete form, you see it more tangibly and concretely what it is; and it legitimatizes the fact that you have this. It's not some abstract floating vapor you're saying. . . . it was kind of like a speech to myself to say 'you really do have this pain. This pain has been hard on you. It's been costly for you'. It was kind of an acceptance for me in that way. Validate so that it does exist and it makes it real. It was important that it was made real to me first. Not that I was carrying this pain and feeling like I am just a chronic complainer about nothing . . . . You feel like you can manage it better. It becomes more real. It's not this abstract, subjective 'I guess I feel pain' kind of thing because I looked okay and I walked okay, but it concretizes it and makes it real. You have a sense that you can look at it. It's outside of you because it is always being inside of you." (D3)

Although ‘separating self from pain’ appeared to be a significant experience for the people who reported it, it turned out to be one of the factors that was ranked low compared to the other factors (reported by 71% of the entire sample). There were five people who did not mention the ‘separating self from pain’. To identify possible condition(s) that might be related to this phenomenon, characteristics of the five individuals were compared. Table 17 illustrates common characteristics amongst these individuals. According to this, high school education was the highest level of education. They had similar pain characteristics, namely having localized pain (80%) that occupies most of the time (80-100%). Low level of ability to articulate (which was determined by my judgment about the person’s ability to verbally articulate their thoughts and experiences based on the post-treatment interview transcript, weekly journal as well as impression I got during the session discussions) and engagement in the psychotherapeutic aspects of the treatment also seemed to be related to people’s experience of separating self from pain. All of them either did not mention or only briefly mentioned the use of imagery during the interview.

Table 16. Common characteristics of the individuals who did not mention separating self from pain

	Education	Pain type	% of time in pain	Ability to articulate	DMT/CAT Experience	Engagement in the psychotherapeutic aspects of Tx
	High school	Localized pain	80-100%	Low to medium	No experience	Low
4	X	X		X	X	X
5	X	X	X	X	X	X
7	X		X	X		X
9	X	X	X	X	X	X
10	X	X	X	X	X	X
	100%	80%	80%	100%	80%	100%

Self-fulfilling action. The fourth category under *activating self-agency* was ‘self-fulfilling action’. This category was related to the participants’ experience of acting out an

imagery of or process toward a desired state, and positive projection of self-image in the future through movement. The term, *self-fulfilling action* was adopted from the concept of 'self-fulfilling prophesy' which originally refers to the phenomenon in which a strongly held belief (either positive or negative) that is actually false may have a sufficient effect on people to act correspondingly so that they ultimately fulfill the once-false conception (Merten, 1948). In this study I am adopting the term to describe the phenomena in which the participants enact their desired state of self or positive affirmation through movement (although it may not correspond with the current situation or the probability is hard); and they begin feeling strongly about the impact of their action in bringing the desired state in reality.

This effect of self-fulfilling-action was based on participants' acknowledgement of the impact/effectiveness of acting out an idea or emotions compared to verbalizing them.

> "It's different. With movement, it takes a lot of pressure off. Talking about it, you are not doing enough about it. You could talk about it all day long, that's not helping you. By expressing yourself through movement, you can actually 'feel' yourself. It helps a lot. You gotta "do" something about it." (A3)

> "When you hear things, it will go in one ear and then come out of the other ear. But when you physically do something it's there with you and you can adapt to it a lot easier when you are actually doing what's been said than just to hear it." (B2)

The following quotes illustrate people's experience in using movement expression as a self-fulfilling-action.

> " . . . . I know I'm far from that, but I could see it in the vision. I felt a little bit of that then. But I had to act out what I was feeling. If I am feeling it in my body, it could become reality." (C1)

> "With the movement I was showing that I am strong and I can be strong. . . . Yes, it means something. It means that not only you are thinking, but your body shows it. It's a performance for your self, an acknowledgement for yourself. When I act it out, it will come to fruition. It will come to that cause I believe in myself." (B1)

One participant's description demonstrates how this experience not only gave her a sense of hope but also inspired her to think about the practical steps to achieve it.

> "It helps you to take a leap of faith in imagining the future cause you don't know and nobody knows. But you take a leap of faith to say and act, 'That's what I want for

> myself' . . . . So it gives you a sense of hope. Then it gives you focus or goal to say 'Well, that's what I want and I see myself wanting that. Then how can I make that happen?" (D3)

The participants' statements shows how acting out one's wishful thoughts or goals can act as a form of positive self-fulfilling prophecy and a way to foster the perception of self as an agent in bringing the positive changes. Participants perceived their actions not as a mere physical movement of body parts but as a meaningful endeavor through which one cannot only express thoughts, feeling, hopes and beliefs, but also exert a self-transformative power.

Participants said that increased self-efficacy and recognition of DMT's benefits motivated them to practice and apply the principles and skills outside of the therapy setting and incorporate them into their routine pain management. In addition, individuals are able to transfer the skills and effects to other contexts of their life. These effects will be discussed in detail later in the therapy outcomes section.

The data from four people did not include the theme 'self-fulfilling action'. These four individuals shared eight common characteristics with 75-100% consistency. Two conditions with the strongest agreement were having a lower level of 'ability to articulate' and 'social support'. It showed 75% agreement on the following conditions – being not married, high school as final education, 80-100% of pain prevalence, coping with other life stressors besides pain and low level of engagement in the psychotherapeutic aspect of the treatment.

Table 17. Common characteristics of the individuals who did not mention self-fulfilling action

	Marital status	Education	Pain level	Ability to articulate	Social Support	Other life stressors	Engagement in the psychotherapeutic aspects of Tx
	Not married	High school	80-100%	Low - Medium	Low - Medium	Identified	Low
4	X	X		X	X	X	X
7	X	X	X	X	X		X
9	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X
	100%	100%	75%	100%	100%	75%	100%

In summary, individuals increased self-agency through participating in the group DMT intervention foremost by activating the intrinsic motivation to spontaneously engage in the therapeutic movement process. The self-directive structure and optimal level of challenge DMT offers supported this process to take place. As the individuals started engaging in the movement exercises, they recognized that they can move and move much more than they thought they were able to. This realization of one's physical efficacy coupled with the sense of accomplishment and mastery experienced at a bodily level strengthened the person's belief in one's ability to participate in physical activity and manage pain. Two specific ways DMT may support individuals' process of activating self-agency involve the use of kinesthetic imagining -1) separating self from pain through objectification and 2) self-fulfilling action. By acting out images related to pain, one may detach oneself from pain, objectify it and create a new relationship with pain, which increases one's sense of control over pain. One may also act out particular imagery that represents a desired state of being through movement; this, in turn, works as a positive self-fulfilling prophesy.

5.6.4.2.2 Connecting to self. Connecting self was one of the key therapeutic mechanisms that belonged to the overarching category *regaining control*. The qualitative data indicated that DMT promoted individuals' sense of connection to self and feel an increased sense of integration between their mind and body. People often expressed 'feeling whole' or 'feeling connected' after each session (in their journal writings) and during the final interview. There were two categories related to individuals' experience of integration and connection to self, namely 1) mind-body connection, and 2) autobiographical integration through movement-based narratives.

Mind-body connection. The first category under *connecting to self* was 'mind-body connection'. The majority of people (except for one person) recognized that DMT assisted them to feel connected to their body and feelings, thereby achieving a sense of wholeness and integration. They perceived DMT as an approach that works at both physical and mental levels

and dynamically supports the integration of the two. One participant distinguished DMT for this property from other disciplines by the following quote:

> "In physical therapy you are trying to get your arm and hand working again, but the therapy we do here I think is more about your mind to try to teach you that there are different and better ways to cope with your pain. You don't have to depend on the medicine because you can do your breathing, relax and meditate… to help you to get your mind right, so that you can get the rest of your body right." (B6)

This quote implies his recognition of how DMT supports the reciprocal action between mind and body as one may use body movement to create positive changes in the mind, and, in turn, the change experienced in one's mind can affect one's body.

Another participant described her experience of mind-body connection:

> ". . . . especially mind and body because I come in and might be like all head. Thoughts of this going on and this going on…. It was like my body was carrying my head. So going in there, it was one rather than this [pointing her body] is a vehicle for this [pointing her head]. That's why now I stop being that, doing the integration."(C4)

Several factors were identified as related to people's experience of mind-body connection, namely the 'body movement', 'breathing exercises', 'mindfulness', the 'use of music in connection with the group motion'. When asked how one may experience mind-body connection, many participants answered that it was the 'action/movement' that bridged the two:

> "I think your mind helps you to think and you put your thinking into movement so it's coming to your body physically. Putting your thought into the right motion." (A1)

> "I could see myself through movement and make a feedback to myself by the way I move" (D4)

> "Moving free helped to integrate and connect more from areas with pain and core to flow of all of me - body, mind, soul and energy together. It helped to integrate all parts. My body and mind. My knees hurt but I feel they are more integrated into my whole being."(C4)

Movement also moved participants from feeling rigid in their body into moving freely and able to discharge emotional tension. This seemed to help break the body armor and develop sensitivity toward their body and feelings, thereby becoming more 'in touch' or 'in tuned' with their body and self.

> "I am more in touch with my body I think. Ever since I joined the group and doing the exercises I feel my inner body. I can actually talk to myself. I could actually use the body language, the movement. I could actually… how can I say this?.... I can actually feel myself. I can actually feel myself." (A3)

This quote describe how movement was perceived to be acting as a vehicle that brings one's thoughts to body, allowing one to physically experience the thought at a bodily level; at the same time one may gain a feedback or awareness about self from the movement. Experiencing these reciprocal interactions seem to give them a sense of integration in all levels.

Acting out specific imagery seemed have a similar effect. One participant explained his experience of kinesthetic imagining:

> "You have some kind of visualization in your mind, and you put this into movement. . . . to use our sensory paths, give our physical body the reaction of how we feel with the pain as we go on in life, and how to demonstrate that physically. Then it wakes up the feelings. By acting your thoughts you are being more connected to your feelings. Your mind, body, and soul, they are all connected" (A1)

The 'connection dance' was recognized as helpful in feeling more 'integrated' and 'centered'. Participants emphasized two specific characteristics of the connection dance as well as the movement exercises in general as important in connecting to self, namely cohesive-whole-body movements and breathing.

> "The connection dance we did, checking out the right side and left side and so on and just kind of the system of realizing and checking out your body parts. That's good to have a system, kind of like a process to check your self. I felt more integrated and connected to my body and self." (C3)

> "Your body doesn't feel like these bits and pieces hanging but actually feel connected to your center. I am feeling that my arms and legs are more connected to my core. It's a physical thing but then in connects to you mentally as well. You kind of feel more together and whole." (B3)

> ". . . .realizing that your breathing has that much of an effect on recognizing how you feel was a lot to learn. It makes you feel grounded and centered. I noticed that attending to breathing helps me relax and regroup. It is a way to tune into myself and to others and to feel connected and peaceful." (C4)

Participants also recognized that 'being in the moment' or 'mindfulness', an ability to focus on the present moment and the activity they were engaging in, as a way through which they felt the connection to self. Participants described their experiences of as:

> "I learned how to take things in the moment. The class starts at 10:30, and for that timeframe I get to experience moving my body . . . . from the hustle and bustle outside of the group to walk into the door, it gave me the sense that I could just be." (B1)

> "What we were doing was exercising and thinking at the same time. If I'm on the treadmill, all I think about would be the pain on my feet. But in this class I think about was what I was doing. I slow down, I breathe and pay attention to the music and my movement." (B5)

One woman spoke about her experience of mindfulness while engaging in movement. She described how she was still feeling the pain while she was narrating her story in movement yet was able to stay in the moment, embracing it as it is and continue with her movement:

> "At the end of my story I was just walking. I'm in pain but it is okay. I don't show it. So I was just doing what I do, closing my eyes walking… Accepting everything, come to terms with it." (B5)

In summary, in DMT sessions individuals experienced a sense of integration and the dynamic interaction and connection between mind and body; this process was supported by factors such as movement and imagery, music, breathing, and mindfulness.

*Autobiographical integration***.** The second category under *connecting to self* was 'autobiographic integration'. Another unique way the participants experienced a sense of integration was through autobiographic reflection of one's life in relation to the pain trajectory. 'Autobiographic integration' was a theme reported by every participant. Categories related to this major category were 'reflection of one's life', 'I've come a long way', 'temporal reflection', 'meaning making', 'appreciation for the current situation', and 'perspective of self in the future'. This theme was mostly related to the mentioning of a particular movement exercise, namely choreographing and performing movement-based narratives on self in pain (For the detail descriptions about the procedure, see p.122-123). Participants reported that reflecting upon and expressing the self with respect to time (i.e., time before they have had pain, the time they started developing the pain condition, present, and future), gave them a new awareness, a more comprehensive perspective on their life, a sense of acceptance, and a positive outlook for the future.

A common framework for the plot of the participants' narratives was identified. First, the participants expressed a sense of grief and resentment about the initial part of the narrative (i.e., transitioning from the time when one was pain-free to the time they have started developing the pain condition). Then there was an expression of helplessness, agony, and desperation in searching for the diagnosis or cure as well as trying to deal with the symptoms. Then, as they moved to the present, a realization about 'how far they have come along' and recognition that they are in 'a much better place now' compared to the past came. This recognition of improvement or progress, made them feel a sense of accomplishment and appreciation for their current circumstances and what they 'still can do' in spite of pain. This allowed them to have peace about their condition and brought a sense of acceptance; then it inspired them to come up with an optimistic projection of self in the future, often represented as being 'free', 'hopeful' or 'strong'.

> "It made me feel good to tell myself how I can deal with pain and how I am going to move along in the future. I accepted the beginning and the middle of it, accepted that things happened and I had to go through it, believing that I will be alright in the future. I can be still strong and there can be a freedom down the road regardless the pain." (C1)

> "Learning to tell my story as a sequence of movement was helpful because I was able to look at the process of injuring myself and going through the pain, terrible pain, fear, stress, helplessness, vulnerable time of my life. Then the grateful process of getting help and support from family and friends and people that I knew. I learned I have to take care of myself and to accept others' help. I learned to not give up. So here I am, I feel joy and hope. I must continue working on being healthy and in physically good shape on a daily basis." (C3)

> "Learning about and linking the past, present and future was helpful . . . . recognizing the past but moving on and seeing where I am and remembering to see a future and not getting stuck. So yes, today is this way but I have good joy in life and I think there are great things in getting older. Looking at that progression . . . That helps me because I used to have more pain and it's different now. . . . I can see more clearly now. Sometimes I have horrible pain and my movement is restricted but I can do things. . . . Now I have to be more active and have more fun to expand opportunities and feel more fully alive - body and mind. I see a very positive future." (C4)

Participants' descriptions of the experience of narrating their story of pain demonstrate how reflecting one's life trajectory through movement gave them an opportunity to have a comprehensive perspective on their life and come to terms with it. It also appears that through

acting out one's Self in time (i.e., past-present-future) helped them find a sense of linkage of self and identity in the meaningful context in one's overall life trajectory.

In summary, DMT helped participants to achieve a better sense of connection to self through various paths. Three ways of experiencing self-connection were identified: mind-body connection, autobiographic integration, and acceptance. Participant experienced it foremost through feeling the dynamic interaction and integration between mind and body. They were also able to develop an integrated sense of identity by reflecting upon one's life trajectory in relation to pain.

5.6.4.2.3 Connecting to others. **'**Connecting to others' was one of the key mechanisms that belonged to the larger category *regaining control*. **'**Other people' was one of the most frequently stated words from the entire set of interview scripts, and there were numerous codes related to the social or relational aspects of the DMT experience. Participants agreed that the fact that the treatment was a group intervention with other people who have the same experience (chronic pain) was an extremely important condition that influenced the overall therapy process as well as the treatment outcomes. 'Connecting to others' was chosen as a concept that characterizes a number of factors and processes related to the social aspect of DMT's mechanisms in building resilience. Participants recognized that DMT intervention had a significant impact on 'restoring/re-setting normality', which was experienced in a social/interpersonal context. Another significant theme that was comprised of various group therapy factors was 'group cohesion'. It appeared that *kinesthetic empathy* was an underlying factor that facilitated the group processes. The interview data indicated that the experience of connecting to others within the treatment group has motivated the participants to (re) connect with people outside of the study setting as well.

Restoring (re-setting) normality. The overall group DMT experience appeared to support individuals' process of restoring/re-setting a sense of normality. Some factors closely connected with this outcome were 'peer recognition', a sense of 'camaraderie' and 'validation' experienced

amongst the group members. Participants frequently described how being in the group made them realize that they are 'not the only one going through this', and 'there are other people who are going through the same thing' as well, which facilitated a sense of normality. This principle of universality, an important principle in group therapy (Yalom, 2005), allowed them to let go of the fear of being judged by others and to become authentic in movement expressions. In addition, the group trust and safety facilitated a readiness for self-disclosure within the group. Participants expressed that such self-disclosure and 'seeing and being seen' by each other provided a basis for self-acceptance and validation of their pain. This, in turn, enabled them to emerge from a socially isolated and marginalized stance toward a restored sense of normality.

> "Listening to different people make you realize that it's kind of normal, it can happen to other people. Acceptance…I'm not the only one. So you feel more comfortable talking to someone about your pain and expressing how you feel." (C2)

> "I learned that I am not too different than any one else. I always feel nervous but I could open up . . . . Everyone was very authentic in expressing their emotions."(C3)

> "You feel some camaraderie. Because a lot of times people who don't have chronic pain really don't understand at all. It's kind of an invisible disability, and nobody knows how you feel. So that part was really good . . . . it gives you some sort of emotional validation that you are not crazy. . . . you feel like you are not all alone." (D1)

What made the normalization process in DMT distinct from general chronic pain support groups was that the various experiences which led to the re-setting of individuals' sense of normality took place at a bodily level based on the principle of kinesthetic intersubjectivity. First, participants described the importance of finding their capacity/efficacy for physical activity in relationship to others:

> "It was encouraging to see that what they do, I can do it too. I may not do it as fast as you all but I can try to do it in my pace . . . . That was an encouragement. Looking at other people and know that 'Wow, I can do it too! That made me feel good about myself." (A3)

> "While we were doing those movement in circle I first thought, 'Oh, I can't do that' but then I didn't want to be the only one not participating, so I tried and I was actually able to do it. Then the more I tried, the more I was able to do it. So I noticed that I am more with everyone. That was really cool." (B6)

It appears that recognizing one's own capacity for movement in reference to other moving bodies in front of them and having the experience of 'moving together' enhanced their self-esteem and made them feel 'more like others' or 'with them'.

A mediating factor identified in this process was 'mutual inspiration' based on the participants' mutual acknowledgement of their common condition as a person with chronic pain. The following quote summarizes this well: "I was thinking if they can do it, I can do it too!" (A4). The participants reported that looking at other people in the group engaging in movement had inspired them to make an attempt to participate even when the pain level was high or they were in doubt about their efficacy to perform the particular action.

> "My biggest inspiration was R. Although she was in pain she always kept the smile on her face and really tried to participate and enjoy what we were doing. That's what inspires me to keep a smile at my face and do as much as I can although I can be in pain. I guess we inspired each other but she didn't even know that she inspired me the way she did." (B2)

The mutual inspiration amongst the study participants seemed to be distinct from the contagion or conformity effects observed in general social settings. The majority of the participants talked about their past experience of being unsuccessful in their attempts to participate in a fitness class or rehabilitation programs. They identified the main reason for discontinuing their attempt as the inability to 'keep up with the normal/healthy people', which not only gave them a feeling of failure and disappointment but also influenced them to avoid future trials. However, during this study, the participants described that they were not only motivated to actively participate in the treatment sessions, but also had started exercising more outside the group as well; some of them even reported trying physical activities they had been avoiding due to the fear of pain aggravation. When asked what caused this change, they said it was the inspiration they had gotten from other people in the DMT group. Because of the acknowledgement that 'we all have the same thing (pain)' or looking at the other person whose condition might be worse than him/herself yet still moving and actively participating, motivated them to try as well. This mutual inspiration appeared to have created a synergistic effect to

maintain the group motivation in order for them to experience the joy of 'moving together' and sense of accomplishment as a group. (i.e., "We did it!"(B6))

Another factor connected to the process of restoring normality was an embodied experience of '*validation*'. This sense of validation was related to their experience of 'seeing and being seen' by each other while engaging in various movement explorations. Two specific movement techniques/methods appear to have a significant impact on this process, namely 'mirroring' and 'movement narrativization'. Although the mirroring technique was applied in diverse ways throughout the entire course of the treatment, one particular activity participants mentioned most often was an exercise in which one expressed his/her own pain in movement while a partner was watching it and then watching the partner reflecting/mirroring the exact quality of his/her movement with their body movement. The quotes below describe how witnessing and acting out each other's pain increased understanding for each other and gave them an embodied sense of validation:

> "Well, it taught us all to use our sensory paths, give our physical body the reaction of how we feel with the pain and how to demonstrate that physically . . . . It makes you feel someone's heart inside of your body and make your body to connect to their feelings. Other people can feel how you're feeling when they watch you acting . . . . reflecting off of each other. 'I know what you're going through'. It also teaches you how to act out how you feel and express your feelings so that other people can understand exactly how you feel at that moment . . . . It's like telepathy or something like that, they can feel it. In that sense, there is more to that compare to talking because acting out, I felt what this other person must have been feeling inside. You can definitely understand the other person much better because you can see the expression of the body. For instance if you see somebody limping, you could feel that they have pain on their side. But if they just talk to you they have a pain on the side, you may have only some sense of understanding." (A1)

> ". . . . seeing the pain in others and having other people acting it out. You are in both sides of listening and being heard that also felt very validating. Within that empathic environment, you feel understood and accepted." (D3)

> "I appreciated when D acted out my pain. Someone willing to feel and understand my pain, that made a difference" (B5)

The data illustrated that through the mirroring process one could identify/emphasize with another person's physical and emotional experiences from a first-person perspective. The 'being mirrored' experience also gave them a deeper sense of acceptance and feeling understood.

Another exercise the participants emphasized as important for validation was the movement narrativization of identity in pain. Participants describes their experience as:

> "I just really wanted to project to get it across to whom I was going to be seen. I wanted them to be able to feel what I was feeling through my movement . . . . . and I felt understood and accepted." (B1)

> "Your past, present and future… you are sharing it with others and you are looking at theirs. So it's not just what I did but what others did too and you start to think about your own. You are reflecting off of each other and it was a way of validating each other's experience." (D4)

Due to the fact that the participants shared their narratives with the group members by performing it in front of each other, they were offered an opportunity to practice from a position of a storyteller (being seen) and of an audience member (seeing). The participants' accounts on both mirroring and narrativization indicate that they experienced a concrete way of validating each other's pain by letting each other know that 'I see you're in pain' and 'I can feel your pain in my body'. What makes this process possible was a unique mode of identification and connection, 'kinesthetic empathy'.

Group cohesion/group therapy factors. The second category under *connecting to others* was 'group cohesion/group therapy factors'. All participants recognized that it was a positive experience to be a part of the DMT treatment group. Various aspects of group therapy processes were identified from the data and categorized under this theme. They include 'bonding', 'care and support', 'self disclosure', 'interpersonal learning', 'here-and-now focus', and 'joy of moving together'.

All participants reported that they were able to 'bond' with each other and 'feel connected':

> "We had a little circle, a little bond going on, we were strengthening one another." (A5)

> "The touch of finger to move together was helpful. I have never felt a connection with someone in that way. It was very fun and helpful, supportive and reassuring to share the space in gentle movement simply touching with fingertips. That was a connection!" (C3)

> "I used to feel sad most of the time and alone; the group gave me connection to others. It helps me to trust myself and trust others" (B1)

Some participants expressed the strong sense of ‘intimacy’, ‘care and support’ they felt with each other by referring to them as either ‘friends’ or ‘family’. They also identified that the positive connection with the group members became a motivation to attend the sessions:

> “I made the group my family. On Mondays I expect to see those faces . . . . I wanted to keep coming. I didn’t want it to end.” (B1)

> “Thanks to my group. I learned I have a great support in this class because I walked in one day with anxiety and fear. But I felt safe to share it with my group what I feel and what I need. You said to take a breath and the group breathed with me. I felt I am not alone. I felt the group really care about me.” (B1)

> “I think that we really co-created our situation in our dance movement class, that’s a big part of this. I feel like I have some really good girl friends now. We shared some awesome special moments that you don’t often get to do. So I really respect that and appreciate that from this group. This doesn’t happen that often in our lives. We were very willing to get together and when I had to miss a session, I was anxious to make it to the next session” (C3)

Sharing vulnerable part of self with each other who would understand and not judge was an important part of the group process. The following quotes describe the participants’ experience of ‘self-disclosure’:

> “It was fine when people opened up about something that they wouldn’t probably share with anybody else. But they felt comfortable with the group maybe because we are all going through the same thing. We all shared out privacy with each other. So it was good that nobody was going to judge you.” (B6)

> “Our group shared so intimately about each of our own particular types of pain and how the pain consumes us. It is so awesome to have experienced each member’s sensitive movements through their pain and how they portray their pain through the many creative movements. We learned about each other and shared with each other through movements and our own innate creativity” (C3)

> “When you go to a group and the people that understand, you don’t have to try to prove or explain it anymore, it’s easier.” (A4)

‘Interpersonal learning’ took place while they engage in the movement activities. This experience was often referred as ‘reflecting off of others’ by the participants. They described how they learned things by watching other people:

> “Finding my center was a little hard for me at first but I found my way watching you and my group. Watching the group helps me to make a change. Reflecting off of others. . . .” (B1)

> "Yeah, it was like a reflection. Seeing how others take care of their pain, gives you a chance to see their pain and learn how they cope with their pain. . . .You can show them other way of taking care of their pain through the way you take care of yours." (B2)

> "This is something people with pain should do more often because they need the time to be able to bond with other people and learn. You will learn about your self and other people, the support, to find certain things about yourself that you might not have known." (A4)

'Here-and-now focus' was another theme identified in the data. People recognized that DMT can support individuals in practicing 'being present in the moment' without detaching self from the lived experience of here and now, which is known to be a challenging task for people living with chronic pain (Kabat-Zinn, Lipworth, & Burney, 1985). What then allowed participants to be able to bring their focus to here-and-now? Participants identified that 'moving to the music while connecting with the group members' as the main condition for this. Tuning one's movement into the rhythm or sentiment of the music in combination with active engagement in the group motion helped people to stay present and avoid distraction from pain. Participant A1 describes:

> "It puts you in a different state of a bubble, putting everything aside . . . . the pain might be still there, but it's okay . . . listening to the music and dancing to it, you come to the right tune with the frequency of the music and you are having fun dancing with people and feel the connection with the people in the room. . . . it gives you a reality of feeling the peace and joy that's different from the outside of the world. You actually experience those things here-and-now. You share them with each other."

Finally, 'creating joyful experience together' was recognized as a significant part of building group cohesion:

> "There were much laughter, joy and togetherness. During the exercise I thought about making one life happier. Good connections! Getting together with other people helps me to relax more and forget about pain." (A1)

> "We all lifted each others' spirit through laughing and joking while dancing and moving around. We had so much fun together and I will really miss them."(A2)

In summary, the DMT sessions created a positive social milieu in which the participants felt a sense of safety, trust, encouragement, acceptance, empathy and validation through an essential therapeutic factor of DMT, *kinesthetic empathy*. Participants were able to experience

positive and meaningful social connections and support from each other, which gave them a sense of belonging and community. The overall experience of connecting with other group members enabled them to regain a sense of normality, which fueled them toward a readiness to reconnect with the outer world. This effect (connecting with the outside world) will be discussed later in the therapy outcome section.

5.6.4.2.4 Enhancing emotional intelligence. Enhancing emotional intelligence was identified to be a part of the key therapeutic mechanisms. The emotional dimension of DMT experience was described by every participant. Thirty four codes addressing various aspects of emotional experience were identified and two categories were formed from these codes, namely 'emotional management' and 'broaden-and-build effect'.

Emotional management. The first category under *enhancing emotional intelligence* was 'emotional management'. All participants except for one person mentioned the effect of DMT on emotional management and improvement in mood. It appeared from interviews that participants experienced an increase in their ability to manage emotion through three modes, 'experiencing emotions' 'emotional awareness', and 'expressive movement as an emotional outlet'.

i) Experiencing emotion: Every participant recognized that different aspects of DMT treatment allowed him or her to experience a range of emotions during interviews and in their weekly journals. People described participating in DMT as an 'emotional' experience:

> "Yes, I am more emotional now. Because by me dealing with my pain, I can show my emotions and how I am feeling. Before I couldn't feel or express myself the way I wanted to because I was in so much pain." (A3)

> "Expressing those feelings in movement made me very emotional at times. During exercise I felt sadness, regretfulness, hope . . . . I felt mind, body and feeling connected. We always think of psychological therapy through verbal expression but I am more aware of how we have other channels of healing." (D3)

The quote by A3 implies that his inability to feel emotion in the past might be related to one of the common ways people living with chronic pain cope with overwhelming pain by desensitizing themselves mentally and physically.

ii) Emotional awareness: People not only experienced emotions but also were able to experience increase in ability to perceive and identify emotions, which was expressed as an improvement in 'emotional sensitivity' (A3) or 'emotional awareness' (C2). The following quote describes this experience well:

> "I think DMT does help you to recognize certain things about yourself you aren't really aware of, and that makes you feel better. I experienced that acting out can be another way of becoming aware of your feelings. When I was acting out my pain, the emotional reaction to my pain surprised me. I saw the anger and heaviness . . . . when you think of pain, it is just pain. But with movement you kind of unveil to what are the sources, what is it connected to, if you could make it into a form, what is it, and then you see a different aspect of what it looks like and how it feels like." (D3)

D3's description illustrate how movement might evoke certain feelings attached to the specific experience (pain) thus how acting out and reflecting on the feelings it conjures can be a mode of emotional awareness.

iii) Expressive movement as emotional outlet: One of the most commonly recognized effects of DMT was the fact that it provides an opportunity to express and discharge emotional tension through movement. Many participants emphasized how acting out their thoughts and feelings, or simply just moving together and having fun with other people acted as an emotional outlet.

> "I was stuck in my own way of how I was feeling, and bottled up. Because I was bottled up so much, I felt like I couldn't come out of myself. I was stuck . . . . Since I started this class, it just helped me to feel free. I feel free now. Now I know how to come out of myself and express myself . . . . it helps me to deal with my pain even better, cause when I was bottled up, I felt more pain . . . . I would be under a lot of pressure or frustrated but I feel more relieved because I actually brought my inside out and I can feel it. I couldn't really enjoy life before because I was so angry and so not in touch with myself. Now since I've been doing the dance therapy, I can actually feel myself in the inside." (A3)

> "You tend to hold emotions inside instead of expressing it outwardly. But through dance, you just release and let it go. I believe there's a healing there. I'd rather act it out and dance than crying all over the place." (C1)

One woman spoke about the way she used some techniques to manage negative emotions.

> "Because before I was so angry and upset not at particularly anybody but just to myself. I was so used to doing things on my own, so not being able to do all the things that needed

> to be done, I will get so mad at myself. But now I don't do that anymore. I take my time I do my deep breathing when I started to get a little frustrated and I do my movement and I take another deep breath and then I just do what I can do" (B2)

Some people described how being able to channel or release negative emotion through movement helped them to better manage their emotion and communicate their feelings, which enabled them to have a positive attitude and improve interpersonal relationships.

> "Before I always had a frown on my face because I was showing that how much pain I have. . . . Now I have more laughter and smile. Because I was bottled up so much, I was putting it on other people. Now that I can show in movement and rhythm whereas though I can actually let people know how I feel by expressing myself without being so angry, I am more open and kind to people. My attitude changed. That's what this exercise did to me. Being kinder and more open-minded to other people relieved a lot of stress. It built me up again." (A3)

> "Emotionally I am able to deal with the pain a lot better because I learned how to channel my thought a lot differently. The negative emotions made me withdrawn, not wanting to be around people. I was always moody. But coming here helped me to ease my mind and understand that even though you are in pain it's okay. You can let people know in a good way instead of bad way that 'today I'm feeling a little not together'. Just helping me mentally to be able to deal with the outside world." (B2)

> "I don't get attitudes anymore. Every once in a while if somebody say something to me it'll tick me off and give me an attitude. But coming to this research group and exercising, was just keeping my mind free because it was a release . . . . I know how to cope with it now. Close your eyes and rocking your body back and forth or something. Just imagine something or think about what you want to do… take a deep breath. Breathe and then breathe out… When you have a better attitude, that helps with your relationship with other people." (B5)

*Broaden-and-build effect***.** The second category under *enhancing emotional intelligence* was 'broaden-and-build effect'. This category was recognized by all participants. The category name is drawn from a theory of positive emotion in the field of positive psychology. *Broaden-and build theory* suggest that positive emotions broaden individual's thought-action repertoire and as a consequence, promote exploration of novel and creative actions, ideas and social bond which in turn, build individual's skills and resources for better coping and resilience (Frederickson, 2001).

i) Positive emotions: All participants agreed that participating in the group DMT treatment was enjoyable and they experienced a variety of positive emotions such as 'joy',

‘happiness’, ‘fun’, ‘calmness’, ‘peace’, ‘relaxation’, ‘hope’, ‘freedom’, ‘love’, ‘pride’, ‘uplifting’, ‘inspiration’ and ‘gratitude’.

> “I’d have to describe is as an uplifting, relaxing, worriless, and happy for the people that I was surrounded by. You forget about the pain and the stress of everyday of going through it.” (C1)

> “Cause before I come here I might have been in severe pain and I may not be in my best mood, but getting in here and being around you all, it comforts me. Focusing on being happy, no stress, you are getting the release of your stress.” (A6)

> “Your mind is relaxed and all you are thinking about is moving freely. For one hour, you are floating on the cloud. It really relaxes and makes you forget about pain. Makes you feel free and hope and trust in God that your pain may get better some day.” (A2)

The data showed that what caused positive emotion appears to be a combination of 1) the joy and life energy body movement brings, 2) releasing of stress and worries through movement, 3) absorption in the moment (state of *flow*), and 4) interacting with people who they feel safe to be around and share.

Participants commonly recognized that the positive emotions generated during DMT sessions improved their mood:

> “Today I came in very stressed as well as depressed. Coming to the group helped me to be a little at ease. I enjoy it so much. I appreciate being here. My pain is a little better. . . . I first came in very upset and leaving very happy!” (A5)

> “I always leave the group in a better state than when I arrive.” (C4)

ii) Broaden-and build effect: Experience of positive emotions appeared to have a broadening effect on people’s awareness and action thereby allowed them to open up their mind and body to explore new and creative ways of acting, perceiving, and coping.

Expressions related to ‘openness’ were prevalent across the data such as, ‘open-minded’ (A6), ‘feeling more open’ (C4), ‘opening up yourself’ (D2). Participants described that this ‘openness’ coupled with ‘relaxation’ and ‘feeling safe’ facilitated them to explore novel and diverse ways of moving their body.

> "When I do the warm-up movement it makes me feel relaxed and open and ready to move my body, different parts of body in different ways." (A5)

> "I learned to wake up and be in touch with myself. You move your body in different ways; touch, spin around, stretching like a starfish, reaching up to the sky, and little movements instead of just walking or bending over. …I've never done that before, and; that is fun!" (A1)

It appear that the experience of 'joy' and 'happiness' allowed them to further explore playfulness and creative actions:

> "If your mind is at ease your body can be at ease too. It was like going back to being in the grammar school where we were able to express ourselves and just enjoy doing it with no limitations to it. . . . It was just rewarding to be able to participate where in your life you don't have those things on a regular basis. It's a special opportunity." (B1)

> "I've never been in a group where I could position myself on the floor and roll around! I mean when I was a child I would do that on the grass playing but I haven't done crawling or getting into the fetal position and so on . . . . it was almost like a play." (C3)

Some participants described how this playful and open environment positively affected learning different skills and principles in DMT session:

> "You may feel silly at times but it's okay . . . . silly in a good way, playful. But we knew that there was a goal behind it, like some of the stuff, like the mirroring, or the activity that describes your pain and so on. . . . that was fun, but at the same time we were able to draw different things out of it." (B6)

> "I do think it's important to be able to play. We were learning but it was also a sense of play at the same time. People do learn easier when it is in a relaxed, play mode. We learned really good stuff and how to take care of ourselves through each other and through our own innate creativity and through your guidance." (C3)

Many participants recognized that through DMT activities they learned to find/focus on strengths and positives rather than negatives:

> "I always worried about the things I couldn't do but when I came here and learned that I can actually do things and find ways through body and movement, it helps you to be able to focus on a good sense instead of bad . . . . we have to not so be hard on ourselves and thinking about all the things we can't do but focus about what we 'can' do. So that's what I started doing. Instead of beating myself about what I couldn't do, I just think about what I can do and I just do it." (B2)

> "I feel like I had new discoveries of inner strength through dance therapy. The sessions were not about feeling our pain through movement but about becoming healthier in managing our pain whatever type of pain we each experience. I believe that the members of our group surprised ourselves and each other with our ability and strength through DMT." (C3)

Many participants recognized that these experiences influenced them to ‘diversify’ and try doing things in different ways.

> “Because when I come in, I might be able to move certain body parts or in certain direction, but by the time I leave I am able to move little more freely and different ways without as much pain. . . . New ways to deal with the pain definitely, different breathing techniques, just different things period that we could do for pain.” (B6)

One woman described how expanding her movement repertoire and widening attention brought an awareness and insight about personal tendencies and movement pattern, which enabled her to open her mind toward incorporating variations in other contexts of her life:

> “It was like another whole thing that has been opened up to me. . . . It made me realize the quality and the intensity of my movement and how there are so much variations, and that I’ve been existing in this extreme tangent rather than all these grey areas with so many other types of movement that I have options. It was another understanding that I could see myself through movement, how do I approach others, how do I make a feedback to myself by the way I move, and how do I face the world by the way I move and how do I interact with the world by the way I move. So it showed me a lot of variations.”(D3)

In summary, study participants recognized that DMT helped them to enhance emotional intelligence by first being able to experience variety of emotions and become more aware of their emotion. People found that movement could be a way through which they can discharge bottled up emotions and express various feelings, which help them to better manage emotions. DMT also allowed the participants to experience a range of positive emotions and improvement in their mood. positive emotions became an amplification factor for individuals to broaden their repertoire for thought and action thereby helping them to build skills and resources for coping.

5.6.4.2.5 Reframing. Reframing was the final category included in the key mechanisms. The name of this category, ‘reframing’ was adopted from a concept by Watzlawick, Weakland and Fisch (1974) who described it as “a means to change the conceptual and/or emotional setting or viewpoint in relation to which a situation is experienced and to place it in another frame which fits the 'facts' of the same concrete situation equally well or even better, and thereby changing its entire meaning.” (p. 95). Various aspects of ‘reframing’ were implied in accounts of what

participants thought the impact of DMT treatment was. Some of the codes related to this major category include ‘pain reappraisal’, ‘reappraisal of personal efficacy for physical activity’, ‘re-patterning the movement-pain relationship’, ‘articulation’, ‘refocusing’, ‘widening attention’, ‘gaining a new perspective’, and ‘finding positive in negative situation’, ‘enlightenment’. Two categories are formed from these codes, ‘reappraisal’ and ‘articulation’.

Reappraisal. The first category under *reframing* was ‘reappraisal’. Participants commonly recognized that some of their previously held beliefs or perceptions related to pain and pain management were not accurate while they engaged in various DMT activities. Across the set of interview data, vocabularies related to new awareness about this discrepancy in self-knowledge were prevalent such as ‘notice’, ‘discover’, ‘realize’, ‘learn’, ‘enlightenment’, ‘becoming aware’, ‘insight’, and ‘new perspective’. Participants said that through body movement, discussion and writing, they were able to adjust/correct some of their prior thoughts, beliefs and behavioral patterns.

Many participants recognized the reframing effect in ‘pain appraisal’ and ‘beliefs about personal efficacy for physical activity’ as most significant. People often spoke about their initial concern or fear about potential pain aggravation when engaging in the session activities. However once they have started moving their body, they realized not only that the pain was not as severe as they had thought but also that movement actually relieved some of their pain a lot of times.

> “You first come in and think you are in so much pain but through the body movements, you get enlightened. So instead of thinking ‘oh, I am in this much pain!” you don’t be in as much pain as you actually thought you were” (B2)

> “You think you are in a lot of pain. But you start stretching and breathing in and out . . . then things become more clear and you realize “Oh, the pain is not as bad as I thought!” (A3)

This coupled with reappraisal of personal efficacy for physical activity (i.e., realizing one can move and do much more than one had assumed), and the positive emotions participants experienced while engaging in the individual and group movement (i.e., experiencing joy from

moving their body, as described in see section), enabled the participants to correct their prior scheme from ‘movement = pain’ to ‘movement = pleasurable and pain reducing’.

> “I think my thinking and attitude toward exercises and movement changed a lot. If there was a class like that I’d be much more interested. I wouldn’t think it will be just breathing and boring, and I’d take those classes. So pain was less intense, I felt more hopeful in that sense ….” (D3)

> “With DMT it was good because when I was here with other girls and guys we had fun doing it. It was relaxing and I wasn’t in pain as much because I did the dance therapy and laughed with the girls and the guys. Moving and getting the exercise done that actually relieves some of your pain. I felt good when I walked out.” (A2)

The data from this section indicates that physical movement allowed participants to have a realistic appraisal and understanding of their pain intensity and capacity for activity. Repeatedly experiencing that moving actually can reduce pain, seemed to help them to create a new framework, “movement is good for you” (A3). Experiencing positive emotion during movement seemed to act as a mediating factor in strengthening this framework. When asked how having a new thought scheme about their physical capacity and pain level helped them, participants described that it helped them to reduce fear of movement and activity avoidance. This then motivated them to exercise more and resume physical therapy. This effect will be further discussed in the therapy outcome section.

Articulation. The second category under *reframing* was ‘articulation’. This category refer to the participants’ descriptions related to the experience or ability to articulate or differentiate their perception of body, self or pain or to look at things in a new perspective. Two fields of articulation are identified namely, ‘articulation of body’ and ‘temporal articulation’.

i) Articulation of body: There were frequent descriptions on the articulation experienced at the bodily level. Increased awareness and sensitivity toward one’s body seem to be closely connected to the articulation process. Participants reported that as DMT session progressed, they had become more ‘sensitive to body’ (A2) and better at noticing their physical symptoms, bodily characteristics or movement qualities:

> "I seem to notice things better. A couple of times when I was feeling upset, I noticed that I was breathing from up here [pointing to her chest] . . . . but I did know from the class to just try to breath to down here, try to calm down and take some deep breath. And it really did help." (D1)

> "Stretching and trying to balance off the body made me to realize my body is swollen up on one side and my body is off balance . . . . the right side of my body is getting smaller, my right side of neck, elbow and lower feet. . . . I realized my body is always tight but doing these exercises increase flexibility. . . . If I continue doing these exercises, like how a child learns to walk, it may help my body to have more balance. I'm waking up the body through sensory touch and physical stretching." (A1)

These illustrations show that people were able to articulate the perception of physical sensations, symptoms, the change in their bodily characteristics, or the way they move. The interview data also showed that participants were able to perceive their body not only as a 'body that feels pain' but also 'body that feels joy and strength', not only 'body disabled' but also 'body able':

> "My body felt stronger and vibrant. I felt so energized and healthier after our class." (C3)

> "The movement enhances what you feel like you can do. It makes you feel the strength and know that 'you can push on, and it's going to be okay'. . . . I also experienced in my body that there is calmness inside." (B1)

One participant described her experience of articulation by widening her attention and evenly distributing her perception of her body:

> "What made me to feel better? To feel more whole and to not feel I'm not my knees or my jaw or elbows. . . . That's just a part of the whole, so it's integrating that with the rest of me. . . . So one doesn't stand more than another. So yes, that's my knee but that's not all of me. Also that's a part of me." (D3)

This illustration shows that her attention and perception of body shifted from a narrow, localized focus to a specific part affected by pain to a broader, more inclusive perception of her body as an integrative whole.

In addition, the category 'separate/differentiate self from pain' appeared to be related to articulation as well. By objectifying their pain using a concrete representation (e.g. imagery, movement metaphors, symbolic body posture), participants recognized that they could distance themselves from their pain and examine the pain and its personal meaning from an objective

perspective. This process can be viewed as a way of articulating the relationship between self and pain and not to perceive one's self as a 'clump' of pain (Bullington, 2009).

ii) Temporal articulation: Another pattern of articulation recognized in the participants' accounts was the perception of self and pain in relation to time. This category was often mentioned when people were describing their experience in creating and performing the movement narratives. Autobiographical reflection of self allowed them to think about their 'pain and coping then' and 'pain and coping now'. The majority of them spoke about their recognition of improvement in pain or the way they cope with it in the present compared to the past. They also seemed to be able to stretch their perception of self into the future, thereby have a coherent view of the story of self in time:

> "I never did anything like that to try to think through what happened, how I've passed what happened, where I am now, and what I am looking forward to in terms of the goals in the future… it was a new experience. It let me know that I have come a long way because I was feeling depressed losing the job and not being able to work no more… and then moving pass that, still having this pain but still being able to see that there are things I can do, so let me move on. So yes, it was horrible back then, but now it feels good because I'm not stuck, getting it going! I've got two girls so I gotta teach them and show that you can push through it and make it no matter what." (B6)

People's accounts about their self-reflection in time demonstrate how they were able to first differentiate present-self from past-self and then differentiate present-self from future-self. This then enabled them to develop a more articulate perspective of the progression of life trajectory in the context of time. Through the articulation process, they were able to think that even though they might be struggling with pain right now, things can be different in the future if you an effort to maintain and improve their health and support from people. This optimistic prediction of the future seemed to have become possible due to the recognition of improvements they had made from the past.

One participant's comment implied that there was a sense of temporal articulation in his experience of pain perception as well. This showed that one can be more aware of the fact that

there are times when they are in pain, but there are also times in which one gets some relief as well, so the pain is not always there. According to A3,

> "Now that I am more sensitive and more in touch with myself, I am more aware about how I feel in body. I try to think about how the pain feels whether It feels warm or cold, achy or sharp. . . . things like that. I actually notice that sometimes I am not in as much pain and I'll be like 'oh, actually I wasn't really thinking about my knee!' So I am more aware."

The secondary analysis showed that there were four people who did not report 'articulation'. Six common characteristics were identified amongst them as shown in the table below. According to this information, it appears that individuals who had high school education as their final education, had lower activity level, lower ability to articulate, and low engagement to the therapeutic aspects of the treatment did not mention experiences of 'articulation'. Also the % of time in pain and having other life stressors were related to this phenomenon. These characteristics were not as commonly shared by other people who did mentioned articulation.

Table 18. Common characteristics of the individuals who did not mention articulation

	Education	% of time in pain	Activity level	Ability to articulate	Other life stressors	Engagement in the psychotherapeutic aspect of the Tx
	High school	80-100%	Low to medium	Low to medium	Identified	Low
4	X		X	X	X	X
9	X	X	X	X	X	X
10	X	X	X	X	X	X
23	X	X	X		X	
	100%	75%	100%	75%	100%	75%

In summary, participants experienced reframing through two main patterns: reappraisal and articulation. Through the body movement experiences, participants gained more accurate understanding of their pain level and physical capacity, which enabled them to re-pattern their mental schema about the relationship between movement and pain. Furthermore, various

movement explorations helped them to have a more articulate perception of their body, pain and self. Reflection of one's identity in relation to the pain trajectory gave them an opportunity to develop a more articulate sense of self in time.

5.6.4.2.6 Facilitating factors. There were several categories that represent factors that appeared to support, facilitate, or enhance other processes in DMT. The most discussed factors were, 'novelty of the setting', 'the music' and the 'therapist support'.

Novelty of the setting. The participants perceived the therapy session as a 'special time and place' in which they could focus on themselves, leave aside the concerns of life and forget about pain. The DMT session was portrayed as a 'sacred place' (C4) or 'a special zone' (B3), distinct from their everyday life contexts. In the group, they felt safe enough to bring their guard down, be themselves, and enter into a playful mode of learning and self-exploration. Participants attributed this experience to the therapist 'setting the stage' (A1), having other people with chronic pain, having music played in the background when they entered the room, and the actual physical environment such as the room and the lighting:

> "It sort of puts you in a different state, like you are under spell or something for the time being and you forget about the pain. It's a special place and time, a special experience we all co-create as a group. It was the right time, right place and right people. It was a right thing to do. . . ." (B3)

> "So when I walked in there, it's like a sacred space. I am glad we always had the same room because that room, even when I go in there now I see that differently. I don't see it as a pregnancy classroom I see it as dance movement room. When I go into the room and I can start to recreate the experience." (C4)

Another factor that contributed to their perception of the group as a novel experience was the fact that they regarded attending each session as a practice of much needed self-care. Participants often referred to it as a 'Me time' and it reminded them to care and love themselves. Participant A6 explained about using DMT as a mode of self-care:

> ". . . . when I go in there I try to leave everything. I was just focusing on myself something I haven't done in 45 years! . . . . . so it was like a self-care. "Me time". . . . Making time for yourself, to love yourself and give yourself a hug and take care of yourself is so important and you need to value that."

Music. Participants commonly recognized that the presence of music enhanced their overall DMT experience. Some described the music as an invisible environment that set the tone for movement:

> "The music was very good to help set the framework. I felt as though it was really nice relaxing type of music better than like B101 type or elevator music, it was more creative and not something I would listen to all the time. Very unique and intriguing, that helped" (C3)

Others recognized that music supported them to either slow down or invigorate/enhance the movement:

> "But in a class I think about what I was doing, I slow down and pay attention to the music. It made me to pace myself"

> "I get the opportunity to hear nice music that is going to enhance the movement and rhythm of my body." (B1)

One participant said the music matched the movement they were doing, which assisted her to feel more integrated in her mind and body:

> "Well the music helps. Your choices of music was always welcoming and always set to what we were doing. It never interfered . . . . it became one. So that allowed just the thoughts that go on in my mind to integrate." (C4)

Therapist support. The participants recognized that the way the therapist structured the group and her qualities as a group facilitator played a significant role in their experience. People acknowledged the therapist role in creating the group environment in which they could feel comfortable and open for movement exploration yet without pressure:

> "In the beginning I did feel somewhat a little awkward or silly but I was okay with that, because you had explained and you'd set the tone, it was almost like a play . . . . So I feel that you'd set the stage so we can sort of doing our movements . . . . You started us out with that feeling. Starting out with the attitude and the framework in mind. There was no pressure and you could just enjoy yourself." (C3)

> "Your ability and skill at instructing and leading us in the movement therapy was so gentle and strong at the same time. I felt very safe in the group and you made me feel as though I could safely perform my dance movement in whatever way I chose to." (D1)

Some people expressed appreciation about the fact that the therapist shared her own experience in coping with pain. They described it as a positive attribute as it made them feel that the therapist is 'one of us' and feel that their experiences therefore were understood better:

> "Oh, the fact that you shared your own experience too really helped. One, it made you the facilitator and the teacher but it also made you a part of the group made us to see that you understood. I think everyone sharing helped. But it made you real. It showed that you knew what we were going through rather than it's just an academic thing . . . . It's like if someone's an addict and the counselors are people in recovery. It's like they are not telling you 'I know this is hard but you can do it' but they know." (C4)

> "I really appreciated the fact that you shared your story with us too. I think what you shared and how you did it was just perfect and beautiful. It allowed us to feel more comfortable to open up and share our stories as well and feel understood." (D1)

The data indicate that the role of therapist in DMT was perceived t as a facilitator/supporter who provided a safe environment for the clients' self-exploration rather than being an authoritative or directive figure. The therapist's self-disclosure reduced the power differential between the therapist and participants and helped participants to be more open and feel understood.

5.6.4.2.7 Therapy outcomes. When asked about the effects or changes they have experienced as a result of participating in the 10-week group DMT treatment, people listed outcomes in various dimensions. There were a number of immediate effects at the physical level as reported earlier in the 'physical benefits' section (See section ***5.6.4.1.1 Physical benefits***). Besides the physical outcomes, four categories are identified in this major category 'therapy outcomes' namely, 'in-control', 'acceptance', 'emotional health', 'readiness to connect with outside world' and 'resilience'. Each theme is described below.

In-control. The first therapy outcome identified was being in-control. Participants recognized that the experience of participating in DMT helped them to feel more 'in control' of pain and health care. This outcome appeared to have a strong connection with individuals' experience of self-efficacy and sense of agency, which is the sense that one is able to manage his/her condition and is in charge of the maintenance of own health.

One aspect that demonstrated participants' increased sense of 'feeling in charge' was *self practice*, that is the ability to independently apply the principles and utilize the skills learned from the DMT session. During the interview, all participants agreed that they had been using some of the techniques they had learned such as breathing, stretching, or the 'connection dance' at home

or at the work place. Some of them mentioned that they had been incorporating the movement exercises into their daily routine and were inspired to keep it up. Due to being able to apply the skills and principles on their own, people felt that they now had some self-help tools to manage pain and related symptoms when needed, which gave them a confidence for self-management and hope.

> "I made a point to take time and do the 10 minutes of this exercise. Then at the end of the day before I go to bed, I could do some more just to check myself out and how I was doing. So I was kind of fitting these exercises in my daily routine." (C3)

> "You feel like you are in control like you can sense that you can master the pain more. You don't feel as helpless. There are things and ways you can do to cope with it. So it gives you a sense of control and hope." (D3)

> "I have a better attitude now because you'll be like, it's okay if you have a bad day because I actually use some of the techniques you taught us. . . . I take my time, I do my deep breathing when I started to get a little frustrated and I do my movement, and I take another deep breath. I have things I can do." (B2)

For one participant, ability to self-apply techniques helped him gaining confidence to resume physical therapy as well as having a hope to rebuild his life.

> "The group was very helpful because I could take some of the stuff, do it at home. . . . So I am going to continue in doing it every day if I can. If I keep dong it, I'll get used to it and prepare myself, and eventually I am going to try and get back to the physical therapy again. I just have to build myself back up again. It's like starting all over!" (A3)

It appears that the *replicability* of some of the DMT movement exercises made it possible for the participants to be able to utilize the techniques on their own. "Learning" was one of the dense codes in the data related to this category (ability to self-practice). Acquiring techniques that are relevant, attainable and replicable thus facilitated this self-practice behavior.

Along with the concept of using DMT as a self-help tool, participants commonly described DMT as an effective pain management strategy they can utilize themselves as an alternative to pharmacological treatment:

> "Because it's better than a pill. Doctors can give you medication but for me, coming here and doing the exercises really do work without my medication. When I come in I didn't take my pills. Different things that we all did really helped. . . I know that I'm going to need to take the pills. But I will try not to pop the pills and tried to come here and do this

> instead. I could see that I can at least cut down the pills. If I don't have to take it three times a day and I could go for twice that's helping me." (B5)

> "It was something to help me when there's nothing's around, no crutches, no medication . . . . how can I make it without these things? So coming to this class, it helped me to look into what my alternatives are when there is nobody around to cry to put my shoulder on or what have you, when medication no longer works, what can I do?" (C1)

In addition to applying the techniques independently, participants discussed their experience of the ability to *transfer/generalize the effect or the skills* they had learned from the study to other contexts of their lives. This enabled them to make practical changes in their daily coping style. For example, two participants described how addressing the topic of pacing in movement helped them to get better at pacing in other daily activities:

> "When we talked about and tried how to pace ourselves through movements, that helped a lot because I was just adamant about always doing everything all at one time. I'd try to get it all done and then rest. Now in between the getting it done, I rest. It taught me to use all those methods to help pace myself." (B2)

> "So with the same concept with slowing down, I make it smaller packages of grocery or smaller laundry load. I'm not like 'Oh, I gotta get this done all at once!". . . . So I find ways to doing things a little bit smaller. It's helping. Again, it takes me back to our group. It all comes together for my thinking." (B1)

Another participant spoke about the possibility and motivation to transfer the knowledge and experience to her work.

> "I actually want to incorporate a lot of different kind of movement in my life. . . . I should mention that in my work it will make a difference. I know that. I want to definitely say how it has changed my life. I think it's really changed the way I see the connection in a whole different level, the way I would work with people that I work with." (D3)

Lastly and most importantly, the overall effect of increased self-efficacy and self-agency appeared to have a significant impact on motivating people to work towards a healthier self and empowering them to take an active role in their own health care. Many participants reported how they had become more motivated to become healthier and actively made plans towards that goal, including 'having more balanced diets' (C1), 'joining the gym' (B1) 'resuming physical therapy' (A3), 'searching for a new type of complementary and alternative type of therapy'(D1), 'taking time for self care'(C3) and so on.

Participant B2 describes how the confidence she gained from DMT motivated her to actively self-manage her symptoms:

> "I learned to comfort myself, as before I would just ignore the pain even if it was really bad and don't even pay it any mind. Now, I rub my shoulder or put ice on it because your body is just like a house. You gotta take care of it. I even eat differently. I exercise more and I try to comfort myself in the best way possible. I put ice pack or heating pad or I would turn on a CD and relax my mind and just think of good places. . . . I noticed that when I feel the stress that's when the pain becomes more intense so I try to do all I can to stay stress free."

Some examples of taking in charge of their own health care and pain management included 'not avoiding doctor's appointments' (B1), 'more actively engaging in the decision making process about treatment options with the doctor' (B1), and 'better communicating their needs and being able to say no or ask for help to other people' (B2). Participant B1 described the change she had experienced:

> "I used to be very fearful of going to the doctors and dentists are the worst. They can do anything to me and I'm not going to say anything cause I am just that scared. But today I could say, "I think you should numb it a little more because it's not numb yet." I wouldn't be able to do that before. It helps me to know that if there is a way out of the pain, then express it. . . . Then it trickles down to just maintaining my health. My family had to actually take me to the hospital because I would be at the point where I can't function anymore because I had been avoiding to get help. This class has helped me understand that if there is something I can do to protect myself, I am going to do it. So many years I would not take care of my health out of fear. . . . I've made three appointments this week. I probably wouldn't have done it if I weren't in this group. . . . Facing it instead of trying to avoid it!"

Acceptance. Acceptance was identified as one of the outcomes of the treatment. The category was related to being able to be at peace with one's body, acknowledge the fact that the chronicity of one's condition may not change yet not being upset about it, and embrace the pain as a part of one's life condition and having a sense of control over the condition instead of being overwhelmed by it.

> "You become more accepting of it. Owning it." (C2)

> "I've grown to be able to cope with it and understand it, and being at a better space with myself." (B5)

Several factors were related to individuals' sense of acceptance, including, 'self-efficacy

for self-management of pain', 'restoration of normality', and 'reflection through narratives'.

i) 'Self-efficacy for self-management of pain'. One of the factors that people mentioned the most related to acceptance was the code 'doing as much as I can' and 'ability to self-manage/self-help tools'. People said that because of the experience of being okay with doing as much as they are able, or being able to do things in moderation/variation as opposed to an 'all or nothing' attitude, they were able to have a sense of acceptance. The following quotes demonstrate how applying the concept of 'doing as much as one can' made them to accept their condition. One quote shows how recognizing one's physical capacity and increasing love and acceptance for self helped the person to have a sense of acceptance for her body.

> "It helps me to realize that although I can' do things that I used to do, but I find another way of doing things instead of not being able to do anything. I am not going to go over there and somersault and flip. I am going to take it in moderation and do what I can do and each day get stronger" (B1)

> "It has helped me to be more accepting of the aging body. Because I use my body and tried out different moves and could see that I was still very capable of dancing and moving and doing things that I may not have thought I was before. . . . Making time for yourself to do these things for yourself, to love yourself, give yourself a hug and take care of yourself is so important. I learned that we need to value ourselves and our feelings from this class." (C3)

ii) 'Restoring normality' was also related to acceptance. People frequently shared that the realization of 'I am not the only one', resetting their sense of normality through recognizing that chronic pain can happen to other people and realizing that there are people who are in worse condition than oneself, helped them to accept their circumstances better.

> " Because I'm not the only one that's going through this. There are more people that are going through pain and listening to different people make you realize that it's kind of normal, it can happen to other people. Acceptance…I'm not the only one. So you feel more comfortable talking to someone about our pain and expressing how you feel." (C2)

iii) Lastly, 'refection through narratives' was another factor that contributed to acceptance. Some participants stated that movement narrative gave them a positive perspective on the present state, which in turn allowed them to have a sense of acceptance.

"It made me feel good that I can tell myself how I can deal with pain and how I am going

> to move along in the future. I accepted the beginning and the middle of it, accepted that things happened and I have to go through it through spirituality and praying and surrounding myself with right people and keeping strong. Then I will be alright in the future." (C1)

The data suggest that the DMT experience helped participants to better accept their body, self, pain condition, and their story of self. This implies that they may feel more connected to their self and embrace the experience as- it- is, instead of detaching from their body or denying the reality of living with pain.

There were three people who did not mention the theme 'acceptance'. The only condition all these individuals had in common was that they were older than the average group age. Even though the agreement was not 100%, it appeared that one of the factors that apply to this phenomenon might be the pain duration. Two individuals had had the pain condition for relatively short period of time (1-4 years) and were both actively receiving physical therapies at the time. This may indicate that they were still in a stage in which one actively tries to find treatment for their pain and may not be ready to accept the condition yet. The other participant on the other hand, had been living with pain for a long time (i.e., over 35 years). So a possible assumption we can make is that for this participant, acceptance was not a significant outcome she had experienced during the DMT treatment at this time, but was something she had already achieved in the past.

Table 19. Common characteristics of the individuals who did not mention acceptance

	Age	Pain duration	% of time in pain	Engagement to therapeutic aspect
	Older than 52	1-4 yrs	80-100%	Low
1	X	X	X	X
4	X	X		X
19	X		X	
	100%	67%	67%	67%

Readiness to connect with outside world. Some participants reported that the positive experience of connecting with others and the restored sense of normality through DMT gave them the motivation and confidence to (re)connect with other people outside of the treatment group. This includes improvements in relationships with family and friends, motivation to socialize more and to search for resources in the community.

> "I learned that it's okay to let someone know that you are not feeling well and you can get a rain check. Not everybody will understand what you are going through, but I learned that it's okay to be at a space that you are in. You just have to let them know how you feel . . . . It was one of my pet peeves not to ask anybody for anything but to do things on your own. But I gained confidence in being able to express how I feel and understood from being in this group. It was really hard thing for me to do, but now I do ask for help." (B2)

> "By me coming here and being around people more . . . . I am socializing more. I've been saying good morning to my neighbors and people I don't know. I don't used to do that because I stayed by myself. So I am more social. I'm really coming along, inside and outside." (A5)

> "I hope we can come and do other things together as well. I want to check out the music therapy you told us and I am going to try the cooking class too so that I can learn how to eat healthy." (A3)

There were five people who did not mention this category. Some aspects that appeared to be meaningful in interpreting these patterns were the fact that these individuals 1) had medium to high level of social support (100%), 2) had medium level of activity level (80%), 3) were still able to maintain job as well as being married (60%). We may hypothesize that the reason why these individuals did not mention connecting with community as an outcome of the study might be due to:

- already having sufficient social support (including being married),
- lack of time to invest in social activities due to being employed, and
- inability to contemplate on increasing socialization because of other life stressors they are dealing with.

Table 20. Characteristics of the participants who did not mention readiness to connect to outside world

	Marital status	Employment status	Pain duration	Pain level	Activity level	DMT/CAT experience	Other life stressors	Social support
	Married	Employed	5-10yrs	40-70%	Medium	No	Identified	High to medium
4				X		X	X	X
6		X	X	X	X	X	X	X
11	X	X		X	X	X		X
18	X		X		X		X	X
23	X	X	X		X	X	X	X
	60%	60%	60%	60%	80%	80%	80%	100%

Resilience. The final category identified in the set of data as the outcome of the treatment was resilience. Some of the participants' descriptions implied fundamental constructs of resilience, which is the ability to withstand stress and adversity and to utilize their skills and strength to recover from the challenges.

> "Today I feel a little tired and body hurt but I am still willing to come out and make the best of things. Walking through pain makes me strong even when I feel like I can't make it." (B1)

> "As far as I can say with the pain and not being angry, it's kind of like having an attitude that I can't let it defeat me. I don't want it to totally control my life and not to be defeated." (D1)

> "I can shake the pain off and still do a lot anything that come in front of me. Still be active with everybody . . . . Even though I'm still in pain I'm still going to work and help out other people if I can, doing my best." (B5)

> "Although you know that you are still in pain, you learn to deal with it in a better perspective. Dance/movement therapy gives you the insight to the point where you can be in pain still and you can do whatever you have to do." (B3)

Different aspects of DMT were linked to the participants' experience of resilience. One participant stated that knowing the fact that there is something she can do to control pain helped her to better accept the pain and 'live with it', and to perceive pain as a 'secondary thing' rather than something that withholds her from living as the person she is:

> "I feel more confident. I feel like there was a way that … basically I found help. There are things I can do and rely on to change the way that I felt . . . my mood, my pain, my everything. . . . I think it's because I learned how to cope better with my pain, so I didn't

> let pain be a boundary to me. I have to be me. You know when you are in pain you are not the same person. So that helped a lot. . . . after this class I learned how to live with it . . . . you kind of get to accept it. So the pain is kind of like secondary thing." (C2)

Another participant described how cultivating positive emotion helped her to build personal resources to better cope with negative emotions and pain, even through the adversity still remains. This represents a fundamental concept of resilience:

> "Dance/movement helps you to focus on something other than your pain. It gives you the insight to the point where you can still be in pain but you can do whatever you have to do. Pain might not subside but through the movement you can change your thought process and to retrain your brain to think through the body and movement you are making. You could change your thought like "I am not in as much pain as I thought I was" but the only reason I knew that was because I was able to move. . . . . Before, anything would just tick me off and I was like a time bomb. But the peace and joy I got out of the group helped me to be in tranquility with myself. Even though I am still in pain I am still happy and doing more than I used to do. I used to just sit in the house and being mad and sad all the time. Now it's given me hope. Sometimes if I am in a lot of pain, I put on a big smile and dance. It then triggers my brain to think that I am happy and feeling all right, and the pain goes away. The pain may come back later on, but when I am in that happy mood it lessens the pain. So I am trying to smile a lot even though I am not in the smiling mood. I've learned that from this class." (B2)

Another significant resilience factor in participants' chronic pain management was the decrease in fear avoidance tendency. This outcome appears to be related to the reframing effect:

> "I used to limit myself. Now I've been trying things I used to avoid like doing exercises on the floor on the mat knowing that it is okay. It may hurt little bit but I know it's not going to 'hurt' me. Before I wouldn't event want to give it a try . . . but I've been doing a lot more of things I used to not be able to do. I am trying to focus on what I am doing and not my pain. Now I try to see how far I can go. I try not to worry about what's going to happen to me if I do it and just do it." (C2)

Some people said they had or were motivated to resume activities they used to do or physical therapy.

> "It made me want to go back. I want to get better health than what it is. Exercising and moving around is good on my health cause if I am just sitting around and not do anything, that's not good. I have to build my heart rate back on, get back on track. The group gave me the confidence to go back to physical therapy." (A3)

An important self-concept that appeared to be connected to the foundation of building resilience and one's lifeworld was self-esteem. Many people expressed how the experience made them to feel better about themselves and to find a renewed sense of self-worth:

> "I had a low self-esteem. By me coming here each and every week, it gave me strength to build my self-esteem up. It just helped me to deal with my day-by-day pain. I felt better about myself knowing that I can do what other people were doing and deal with the pain. It's an encouragement. It just helped build myself up. That's what the movement did. It's like taking steps up the ladder, building myself up. It is going to take a while but I'm willing to take a chance and go ahead and build little by little and see how far will I get. You know, by taking a chance I am building myself up then I could have a better health." (A3)

> "I don't hate myself as much now because I think that I am my client now. . . . I learned to value myself and my feelings. I take care of myself and I can do it" (A2)

The DMT experience helped people to think about their goals in life and instill a sense of hope in achieving them. While describing her experience of movement narrative, participant B1 shared the following:

> "It was the movement of hope. I want to reach that goal. I hope that I continue to want to reach that goal cause once it stops then the life is over for you. So I want to keep getting stronger but in my own way, not in someone else's viewing . . . . I wish I was like when I was 20 years ago. But I am who I am and time stops for no one. So I have to sort of catch up who I am now as best as I can for my personal growth."

In summary, the data suggest that participants of the DMT study experienced therapeutic outcomes related to resilience for chronic pain management. These outcomes included 1) increased sense of control over pain and motivation to take charge in one's pain management and health care, 2) acceptance of pain and self based on the experience of resetting normality, finding personal efficacy for physical activity, and integration of identity through narrative reflection of one's life, 3) readiness to reconnect with outer world by improving communication and interpersonal relationship, increasing social interaction and motivation to seek resources from the community, and 4) demonstrating fundamental principles of resilience.

5.6.4.2.8 Contextual factors. The results from the secondary analysis showed that the themes that ranked the highest were 'physical outcomes', 'group cohesion', 'broaden-and-build effects', 'self-application/transfer skills', 'autobiographic integration', and 'person factors' while 'self-fulfilling action', 'articulation' and 'connecting to community' were the themes ranked lowest.

Table 14. Percentage of the themes mentioned by the participants

Percentage of the themes mentioned	Themes
100%	Person factors, physical outcomes, self-application/transfer skills, autobiographic integration, group cohesion, broaden-and-build effects
94%	Restoring normality, reappraisal, emotional management
88%	Loosening up and breaking free, mind-body connection, self-efficacy
82%	Acceptance, structural factors
76%	Self-fulfilling action
71%	Articulation, connecting to community

Examination of the contextual conditions for some of these factors indicate that the conditions linked with the above factors most frequently were 'the % of time an individual experiences pain', 'social support', and 'ability to engage in the therapeutic aspects of DMT treatment', followed by 'pain duration', 'activity level' and 'other life stressors' as shown in the following diagram.

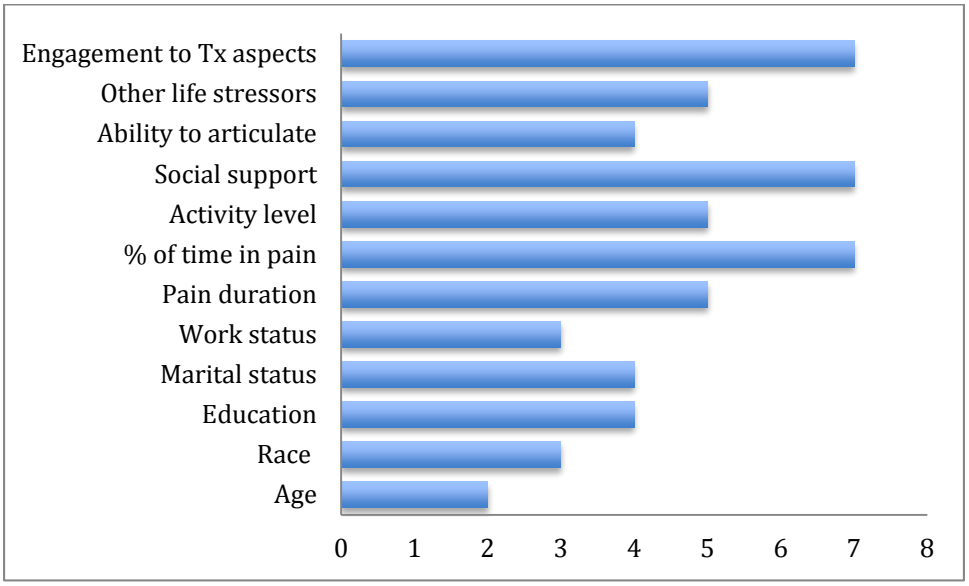


Figure 16. Characteristics related to the contextual conditions

In addition, some of the characteristics of the five people who reported the most of the themes (95% to 100% of the entire themes) were identified in the table below.

Table 21. Common characteristics of the participants who mentioned the most number of the themes

	Marital status	Activity level	Ability to articulate	Social support	Attendance	Engagement to therapeutic aspects
	Married	Medium to high	High	Medium to high	9-10 sessions	High
3	X		X	X	X	X
13	X	X	X	X	X	X
14	X	X	X	X	X	X
17	X	X		X	X	
25	X	X	X	X	X	X
	100%	80%	80%	100%	100%	80%

According to this information, people who reported all themes (100%) or except for one theme (95%) were all married with medium to high level of social support and had a good attendance during the study period. 80% of them had medium to high activity level, demonstrated high ability to articulate and high engagement to the therapeutic aspects of the treatment.

Characteristics of the three people who reported the least of the identified themes (71% to 76% of the entire themes) are displayed in the Table 23. The table demonstrates that these participants did not report as many themes had high school degree as their final education, had low to medium activity level, identified other life stressors yet had lower level of social support and low level of engagement to the therapeutic aspects of the treatment. Some other less strongly common conditions (by 67% agreement) were not being married, having pain duration between 5-10 years, and having pain 80%-100% of the time.

Table 22. Common characteristics of the participant who mentioned the least number of themes

	Education	Marital status	% of time in pain	Activity level	Other life stressors	Social support	Engagement to therapeutic aspects
	High school	Not Married	80-100%	Low to medium	Identified	Low to medium	Low to medium
4	X	X		X	X	X	X
10	X	X	X	X	X	X	X
23	X		X	X	X	X	X
	100%	67%	67%	100%	100%	100%	100%

5.6.5 Model construction

Based on the primary analysis of the data, I drew a diagram that depicts the initial model, which is displayed below (Figure 17).

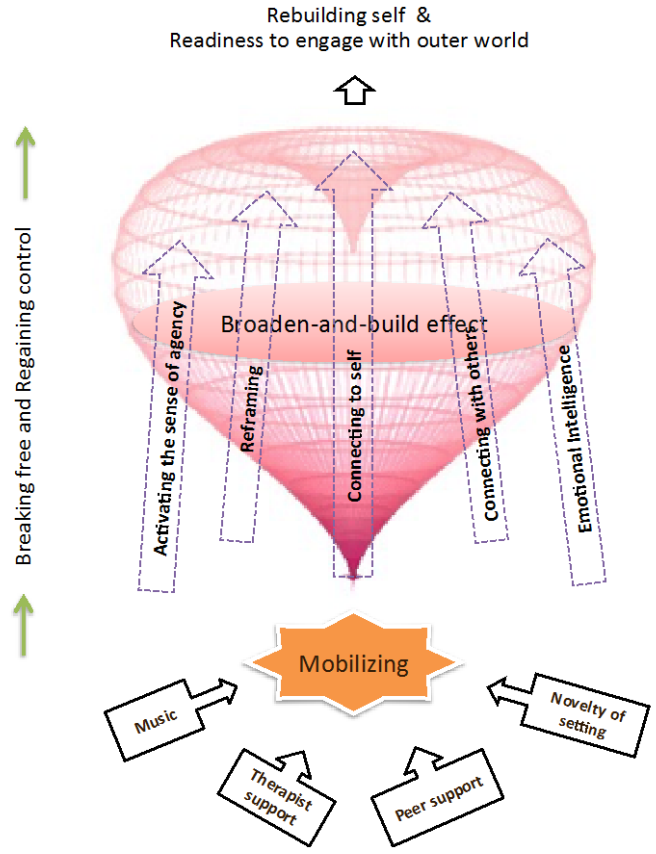


Figure 17. Initial clinical model diagram

One of the committee members, Dr. Susan Gasson, recognized that the structure of this model I had developed could fit well with an existing framework of axial coding process suggested by Strauss and Corbin (1990). Dr. Gasson showed me an interpretative model diagram she developed based on the conceptualization of Strauss and Corbin's coding framework (Figure 18). I found that the visual framework indeed would fit nicely to explain the grounded theory of this phase, and used it to depict the clinical model.

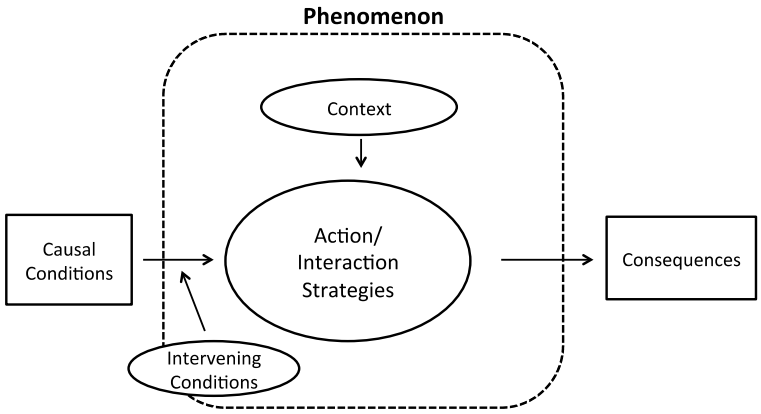


Figure 18. Gasson's interpretative model framework based on Strauss & Corbin's axial coding process

5.6.5.1 Developing the grounded theory. A vital foundation in developing theory was the use of theoretical memos and integrative diagrams. Memos have been written through the constant comparative coding and analysis process to capture the emergent concepts related to the categories. The memos had been revised and updated throughout the analysis process. To write up the final theory, memos are reviewed and integrated in relation to the core category, the theoretical categories and its properties (Glaser, 2007). This process of sorting memos generated the theoretical outline in order to articulate the

grounded theory. Concurrently, multiple versions of diagrams were drawn based on Dr. Gasson's model framework to best depict the relational patterns from the categories and properties into a visual representation. Based on the final outline drawn from the memos and interpretation of the final diagram, a grounded theory is written.

5.6.5.2 Grounded theory. The final model diagram and grounded theory are presented below.

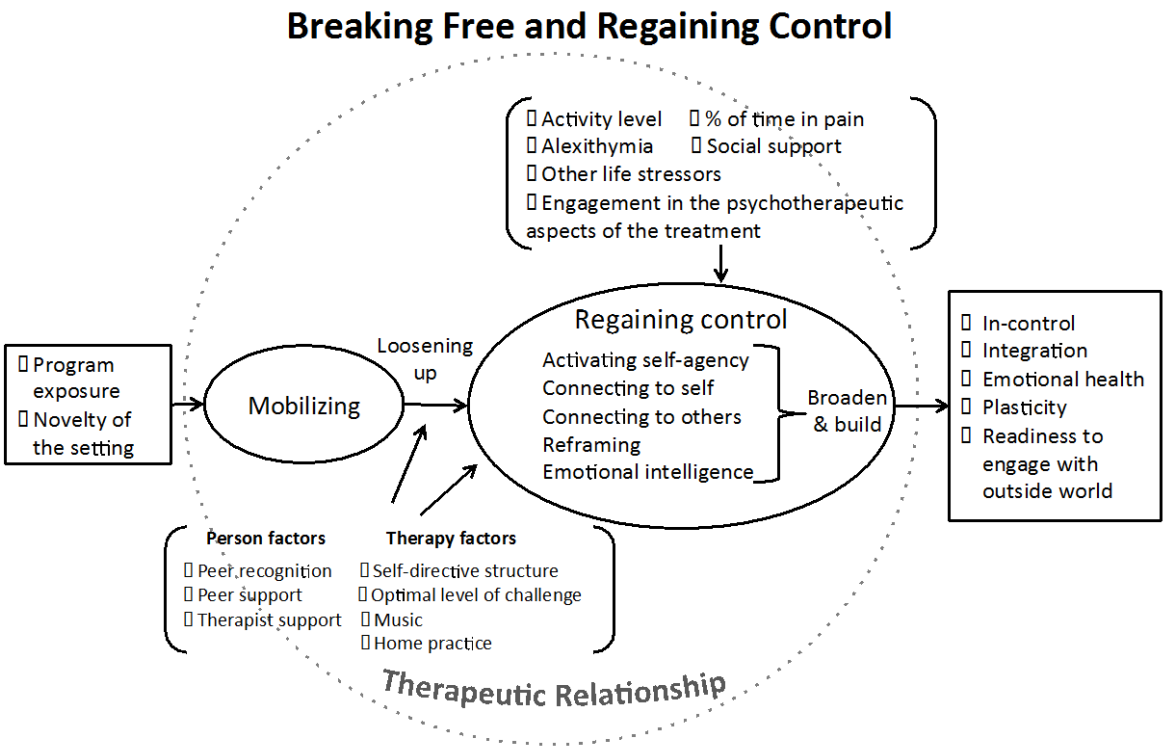


Figure 19. Grounded theory model from Phase II qualitative data analysis

The overall experience of individuals with chronic pain in participating in a 10-week group dance/movement therapy intervention was a process of breaking free and regaining control over pain and their health. DMT provided a novel environment in which they could feel safe to

explore various issues (physical, emotional, cognitive and social) related to the experience of chronic pain through their body movement and innate creativity. Movement/mobilization was recognized as a catalyst that allowed people to loosen up their physical and mental rigidity toward a more open state of mind and body; this enabled the core therapeutic processes of the treatment to take place.

Five mechanisms appeared to be related to this process namely, 1) activating self-agency through which participants developed a sense of control over their pain and of being in charge of their health and life in general, 2) connecting to self, which allowed participants to learn a new way of being in their body and experience a sense of coherence about one's identity and life trajectory in relation to the experience of pain, 3) connecting to others, which was a process of resetting/restoring normality and co-creating a positive social experience through kinesthetic empathy and meaningful movement-based interactions with the group members, 4) enhancing emotional intelligence, which included developing emotional sensitivity and awareness, discovering a new way of expression and communication, and experiencing an array of positive emotions that enabled learning new coping skills, and 5) reframing, a process of transforming one's cognitive schema about personal capacity, pain, and movement-is-pain link, as well as the articulation of perception at various levels – body, pain and self in the past-present-future.

Some moderator/intervening conditions that impacted the main therapeutic processes included person factors (i.e., therapist support, peer recognition and support), and therapy factors (i.e., self-directive structure, optimal level of challenge, music, and home practice). In addition, a set of contextual conditions that intersect dimensionally in creating the circumstances for the therapeutic processes to occur were identified, namely prior activity level, pain intensity, alexithymia, other life stressors and engagement in the therapeutic aspects of the treatment.

As a result of these dynamic processes, people experienced an increased sense of feeling in charge of their health care and life in general, acceptance of pain and integration, better

emotional health, readiness to connect with the outside world again, and fundamental attributes of resilience.

In summary, the overall process of participating in the DMT treatment for individuals with chronic pain was breaking free from the state of 'being frozen/stuck in the present moment where the painful body is the only and every way a person experiences the world' toward a more open and empowered state of being in which one feels a sense of control over pain and his/her life; a state in which pain becomes 'secondary' and one's way of being-in-the-world is much fuller. This process was enabled by embodied hope experienced by the participants through exploring and discovering their strength, capacity and meaning of pain in a safe therapeutic environment that was co-created by the people who had shared experience.

5.6.6 Discussion of the Qualitative Findings

The purpose of the qualitative arm of the study was to identify factors and mechanisms of DMT in resilience building for people living with chronic pain as a result of participating in a 10-week group DMT intervention. The qualitative findings showed that the overall experience of partaking in the DMT treatment could be recapitulated as a process of '*breaking free and regaining control'* (the central phenomenon), that is a process of getting out of the state of 'being stuck' and feeling helpless toward a sense of 'moving forward' with their life and feeling the power/control over pain as well as their life.

5.6.6.1 Novelty of the setting. The DMT group was perceived by the participants as a 'special time and space co-created by people with shared experiences' distinct from everyday living milieu, in which one could forget about other life circumstance, focus on self, feel safe for self-disclosure and engage in a creative and new learning experience. This demonstrates that DMT treatment provided the therapeutic environment or milieu that is identified as the medium of therapy in group psychotherapy, in which all interactions and activities are regarded as potentially therapeutic and are subject to exploration and interpretation (Campling & Haigh, 1988).

5.6.6.2 Mobilization as a catalyst. Participants recognized that the fundamental element of the DMT experience that acted as a catalyst for all therapeutic processes was the power of embodiment and movement itself. Besides various physical benefits (e.g. invigoration, pain reduction, functional improvements etc.) people reported that movement rendered a 'loosening up' effect at all levels – physical, cognitive, emotional, and social- as well as a sense of 'breaking free' from an imprisoned state of being or 'getting out of stuck-ness'. Some of the metaphors related to this were 'a chick hatching from egg', 'breaking out of a mold' or 'ice'. The concept 'loosening up' is also found in an implicit model of DMT for chronic pain rehabilitation by Bullington et al (2005) as shown in section 4.2.4.1.1. Bullington and colleagues suggested that the issue of 'rigidity' is one of the most problematic characteristics of people with chronic pain. They stated that a non-verbal therapy form like DMT can help people "to loosen up to gain flexibility of body and psyche and acquire a sense of new possibilities" (p. 253). The qualitative data from this study provide further evidence of the significance of this mechanism.

What accounted for the therapeutic mechanisms of mobilizing and loosening up? Some of the participants' descriptions indicate that the spontaneous and expressive movement process allowed them to experience cathartic release of negative emotional tension and distress. This experience appears to be linked to the fight-or-flight response, a basic human survival mechanism. There is a large body of literature on the relationship between the experience of stress/trauma and chronic pain, as well as the damaging effect of chronic pain on the brain due to the constant operation of the fight-or-flight signal in the nervous system (Chapman, Tuckett, & Song, 2008). Evidence from neuroscience research suggests that a person's failure to successfully produce fight-or-flight response to a stressful condition can result in immobilization and inability to attend one's inner state of perception, and this may become a conditioned behavioral response; thus successful therapy should include physical self-experience and self-awareness using embodiment-based techniques such as breathing or body movement, and help the individuals to experience a physical sense of control over their stressful situation (Van der

Kolk, 2006). Chronic pain patients' experience of 'feeling stuck', 'imprisoned' or having a sense of rigidity in their overall system can be related to this 'freeze' response. Therefore the study participants' experience of the sense of freedom and healing might be understood based on this theoretical framework.

5.6.6.3 Regaining control. Mobilization seemed to have activated participants to access a range of therapeutic process (action strategies directed to the phenomenon), which helped them to regain a sense of control over pain and their life. Five patterns/mechanisms were identified to be part of this process of regaining control namely, activating self-agency, connecting to self, connecting to others, enhancing emotional intelligence, and reframing.

5.6.6.3.1 Activating self-agency. Participants recognized that DMT helped them to increase their internal locus of control/sense of agency. The models by Bullington et al. (2003) and Sjöström-Flanagan (2004) outline a similar process. The findings from this study indicated that activating self-agency was closely related to the process of practicing the intrinsic motivation to spontaneously engage in the therapeutic movement exercises, recognizing personal efficacy for physical activity, using action as a positive self-fulfilling prophesy, and separating self from pain through the use of imagery.

An additional notion pertaining to spontaneous engagement in the physical activity should be discussed. It was inferred through the analyses that intrinsic motivation for physical activity as opposed to feeling demanded by external pressure was particularly important for people living with chronic pain. This phenomenon seemed to be related to the underlying issues of social validation of pain and stigmatization. Individuals living with chronic pain often feel that other people view them as either being hyper sensitive to pain, 'weak minded' or being lazy, when it comes to engaging in physical activity (Cohen, Quintner, Buchanan, Nielsen, & Guy, 2011; Jackson, 2005). Participants spoke about their experience of feeling pressured, forced or judged in a fitness class or a physical therapy session; those experiences had made them become more

passive or even defensive about exercising. Because they felt that other people did not understand their pain or underestimate the seriousness of their condition, they shared that they were worried that other people would push them to perform beyond their capacity and pain threshold. As a result, they feared they might end up reinjuring themselves or aggravating pain, which led to resistance or passive attitude toward physical activity. Therefore, being in a setting in which they were allowed to engage in physical activities 'at free will' appeared to have influenced them to disarm the precautious mindset and to become self-motivated and feel in charge. Furthermore, this was associated with a motivation to challenge themselves to try more and test their limits.

Utilizing the reinforcing and actualizing effects of movement to support people to concretize and achieve therapeutic goals as well as to empower them to experience the authoritative power for positive change is a basic principle of DMT practice. Koch and Fischman (2011) refer to the use of this faculty of movement in DMT with the term *enaction.* They attest how *enaction,*

> ". . . . confronts us with our involvement, our responsibility as creators of our destinies; our contribution as active participants in the ongoing situation. It also reminds us that our destiny is not already written; it is being co-constructed every second–changing with each of our movement decisions and, at the same time, being changed by them. This approach gives us back our power of transforming and being transformed, and of affecting and being affected. It reminds us that we are participants in the game of life. Possibilities of what can be achieved through imagination come closer." (p. 66)

In the current study, characteristics of *enaction* clearly emerged and were categorized as '*self-fulfilling action'*. The findings from this study demonstrated that the DMT intervention allowed the participants to experience the empowerment of self as an active participant in creating one's own destiny and transforming the situation they are in rather than being dictated by the situation. Another way people practiced enaction and self-fulfilling action was the use of movement narratives. According to Yung (1997), narrative re-inscribes the objectified body (body bring a medical object) into discourses of subjectivity as it gives a person a voice; thus constituting a narrative can help people to create an alternative locus of disembodied self and

provide a foothold for their selfhood. It appeared that by enacting their narrative, people experienced self as an author/agent of their experience and life.

The findings also suggested that *kinesthetic imagery* allowed individuals to separate or distance themselves from their pain instead of feeling that the self is enmeshed with pain (perceiving self as a 'clump' of pain as Bullington (2009) stated). The mechanism for this was objectification, which helped people to concretize and validate the pain as well as to feel an increased sense of control over pain. This finding is consistent with the framework on the mechanism of 'pain and imagining' by Scarry (1985) as described in section 1.1.3.5. According to Scarry, due to the objectless nature of the pain phenomenon, creating an avenue of objectification for pain through imagination –which she calls 'work', can be an effective way to reverse the detrimental effect of pain. Once an individual can project pain to certain images she or he can distance oneself from some of its adversity. This then enables a movement toward one's body again (acceptance and reducing detachment) as well as feeling more in control over pain. The findings from this study supported Scarry's construct. But the fact that the participants' experience did not end in conjuring an image of their pain but extended to a level in which they actively explored and transformed the contents of the image, seemed to have made the work even more potent.

5.6.6.3.2 Connecting to self. In the current study, creating a sense of self-coherence and personal integration emerged as one of the key therapeutic mechanisms of people's experience of healing. Two patterns of connecting to self were identified namely, mind-body connection and autobiographic integration. The participants reported that movement exploration, along with other various elements of the treatment (i.e., use of imagery, breathing, component of mindfulness, music, and meaningful action) allowed them to achieve a sense of integration between their once fragmented mind and body. Participants experienced that DMT works in both mind and body levels and movement is a vehicle that dynamically supports the integration of the two. Mind-body integration is one of the salient process and outcome commonly addressed by previous studies

that reported people's experience of increased sense of wholeness, acceptance of one's body and pain, ability to 'be with the self' despite the pain (Bullington et al., 2005;Christie, 2006; Gorham & Imus, 1999, as cited in Goodill, 2005). Bullington and colleagues (2003) discussed that the experience of chronic pain was perceived by their patients as a 'problem of linkage', that is a state of broken connections, disintegration and chaos on all levels (body, emotion, cognition, and identity). DMT helped the feelings, thoughts, memories and body sensations to link together so that people could experience this connection without being overwhelmed by painful and threatening experiences.

The findings related to the impact of movement-based narratives on the participants' experience of achieving sense of coherence and personal integration is notable. According to Hanna (2004), telling stories through the artistic form of dance, can help people to make sense of the incomprehensible, and transform the surreal into something real. The participants' accounts demonstrated that the experience of creating and performing movement narrative allowed them to gain better understanding and new insight about self and pain in the context of their life trajectory. Through the process of embodied narrativization, corporeal sense of meaning emerged and they were able to actively create a new, positive meaning of their experience of pain so that the pain-related aspect of self can be integrated into the overall sense of self. As Mattingly (1998) attests the findings suggest that the experience of narrativization have enabled people to experience reconstruction of their *selfworld* that has been un-made by pain.

5.6.6.3.3 Connecting to others. Although it has not been specifically discussed by previous DMT research in chronic pain, the significance of group therapy factors (as categorized as 'connecting with others') in cultivating a person's resilience emerged from the grounded theory. Several aspects of conventional group therapy factors were recognized from the data in some degree such as universality, group cohesion, instillation of hope, imparting information, socializing techniques, interpersonal learning, imitative behavior, catharsis, and existential factors

(Yalom, 2005). A unique mechanism of DMT in activating the above mentioned therapeutic factors lies in the fact that these factors were operating at the biopsychosocial level of sharing, understanding, and co-creating a meaningful social experience, called kinesthetic empathy. Bullington et al. (2003) discuss the importance of this embodied kind of therapeutic encounter in people's healing process while citing Brody (1997):

> We must see the story of the sick person as the suffering body itself giving the testimony of its suffering; and the listener to the story is necessarily present, not as a taker-in of information, but as herself a potentially suffering body that receives the testimony of suffering in a much more immediate, body-to-body fashion. (as cited in Bullington et al, 2003, p. 331)

As discussed in the literature, people living with chronic pain repeatedly experience skepticism, lack of empathy and validation, which often drives them into deeper isolation. Therefore, it is emphasized that the rehabilitation of these individuals has to do with meeting their eager desire and needs for understanding and validation (Benner, 2007). The findings from this study indicate that DMT offers a unique and effective way of meeting these needs through an embodied mode of 'seeing and being seen'. Through this experience individuals may experience a profound sense of acceptance, empathy, and validation.

Another notable factor identified from the findings related to the category, connection to others, was DMT's effect on helping people to 'be in the moment', 'be fully present', or practice the 'here-and-now focus' (Yalom, 2005) through the power of group movement experience. Leder (1990) uses a term 'dys-appearing body' to illustrate a person's experience of sensing one's body rising to the field of perception as a 'thing-like' presence when s/he is in pain. Leder furthermore explains how this experience may cause the individual to be "thrown back into the body in itself and be cut back from the outer world" (Vrancken, 1989, p. 442). Participants in this study stated that engaging in the DMT process allowed them to bring their focus to the present-moment and stay connected to the people in the group. It furthermore enabled the lived experience of here-and-now instead of being distracted by pain and 'thrown back' to the obsessed focus to the body in pain.

Performing movement narratives also facilitated the experience of connecting to others in a meaningful way. Frank (1995) said narrativization of one's experience of illness could give people an embodied voice that may also change lives of others who listen to them. Furthermore it is an action of placing one's self and body within the "community of pain" in which one may experience the feeling of being heard and understood by others (Jackson, 1994). This experience was recognized by many participants of this study.

5.6.6.3.4 Enhancing emotional intelligence. The repeated mention by participants of the emotional aspects of the treatment being very important confirms that promoting emotional health is a priority treatment outcome in resilience building in people in chronic pain, as suggested in the literature (Karoly & Ruehlman, 2006; Sturgeon & Zautra, 2010; Alex J. Zautra, Johnson, & Davis, 2005). The effects of discharging emotional tension and identifying/channeling emotions through symbolic movement expression identified in the current study were similar to the findings from previous research (Bojner Horwitz, 2004; Bullington et al., 2005; Sjöström-Flanagan, 2004). A notable finding regarding the emotional aspects of the DMT treatment in the current study was the prominent influence of positive emotion on the resilience building process in chronic pain. People stated that DMT allowed them to experience a range of positive emotions, which facilitated them to broaden their repertoire of thoughts and actions thereby helping them to build skills and resources for coping. Participants' reports pertaining to the effect of positive emotion in DMT group were congruent with the operational definition of broaden-and-build theory of positive emotion provided by previous researchers (Frederickson, 2001). (Lightsey, 2006; Linton & Ryberg, 2001; K.R. Lorig et al., 1993)

5.6.6.3.5 Reframing. The findings related to the significance of cognitive restructuring on individuals' ability to cope with the impact of chronic pain were consistent with previous literature (Lightsey, 2006; Linton & Ryberg, 2001; K.R. Lorig et al., 1993). Two patterns of reframing were identified in the current study, namely reappraisal and articulation. The finding implied that the embodied experience of reality and awareness people get in DMT may have a

strong effect on changing their cognitive schemes related to the perception or beliefs about ones body, physical capacity, overall health as well as pain severity. This awareness was associated with reduction of negative coping (e.g., reducing fear avoidance) and increase of positive coping (e.g., improving body image, exercising more).

In discussion of the concept 'structural transformation through articulation', Bullington (2009) wrote that individuals "transform their field of experience from pain focused to open up to exploring new possibilities of experiencing the non-pain related aspects of the self and the world" (p.107) and transform what used to be perceived as 'dangerous' into 'manageable'. Her concept was identical to the theme 'reframing' in this study.

Based on the clinical evidences and findings from brain imaging, researchers have suggested that to change people's negative cognitive structure related to pain and body perception, treatments that target cortical areas should be applied (Cauda et al., 2012; J. S. Lewis et al., 2007; Longo, Betti, Aglioti, & Haggard, 2009). This means treatments that combine experience of looking, hearing, touching, and motor imagery can be effective in correcting cognitive distortions (J. S. Lewis et al., 2007). DMT is a unique treatment modality that encourages people to process psychological concepts and meaning of pain experience through dynamic multi-sensorimotor experiences. Based on the empirical evidences combined with the qualitative findings from this study, we may advocate DMT as an advantageous treatment approach that effectively address the cognitive aspects of chronic pain management.

5.6.6.4 Therapy outcomes. 'Feeling in-control/in-charge', 'integration', 'emotional health', 'readiness to connect with outside world', and 'resilience attributes' were identified as significant outcomes of the 10-week group DMT treatment. Regaining control, and the motivation and capacity to take responsibility for oneself was recognized as an indicator of successful rehabilitation for chronic pain in previous studies (Dunn, 2004; Keefe et al., 2004; Turk & Okifuji, 2002). The main adversity of chronic pain lies in the fact that the pain indeed is

"chronic", meaning that the condition has no cure and so will likely last indefinitely. Therefore, by and large, the most important factor in the management of chronic pain is empowering and enabling the patients to find what they can do to cope with the symptoms and to develop and maintain as healthy lifestyle (Gatchel, J. & Okifuji, 2006). In that sense, activating an individual's sense of agency and intrinsic motivation for managing one's own health as well as providing tools one can feel confident in using to manage their pain related symptoms might be the most important therapeutic outcome. All of the participants in the current study stated that through participating in this study, they had learned essential principles (e.g., pacing, prioritizing self-care, importance of communication) and practical skills (e.g., breathing and relaxation techniques, connection dance) that they could use to manage their pain and other psychological symptoms. They acknowledged that DMT could be used as an effective pain management approach alternative to the medication.

Other outcomes identified from the grounded theory also denoted DMT's potential in activating the core principles of psychological resilience in individuals with chronic pain. Sturgeon and Zautra (2010) suggested three attributes of resilience in chronic pain namely, recovery, sustainability and growth. This study's findings demonstrated that DMT may support people's process of 1) recovery by resetting/restoring normality and motivating them to resume activities and treatment, 2) sustainability by opening up to the possibility of finding alternative, adoptive ways of persevering desirable actions, goal pursuits and social engagements, and 3) growth by bringing recognition of one's capacities and personal growth that arose as a consequence of their coping efforts.

5.6.6.5 Therapist effects. Several important therapist factors were identified as potential moderators. First, there was the appreciation of acknowledging pain as a shared experience. Similar to the effect of having a sense of camaraderie amongst the group participants, people perceived the therapist's self-disclosure as an 'insider'(i.e., having experience of living with pain

herself) as a positive factor in the overall program experience. Several people reported that having a therapist with a first-hand experience of what they are going through, made a difference in their level of comfort and trust in exploring and sharing their personal issues related to pain. They perceived the therapist as being empathetic, sensitive and supportive. Participants also recognized that some of the personal characteristics of the therapist (e.g. attitude, demeanor, level of knowledge on the topic, or the way she spoke) had significant effect on their experience in the treatment process as well.

As discussed in section 3.2.5.3 ('Roles of the researcher'), in this research study, my position was an "insider-outsider"(Kanuah, 2000, p. 60), and this position seemed to have acted as a significant variable in people's experience of therapy process. The *therapist effect* is much debated topic in psychotherapy as it is recognized that often 'who does the treatment' can determine greater variance in treatment outcomes than 'what the treatment is' (Cella, Stahl, Reme, & Chalder, 2011). This applies to the research process as well (i.e., 'investigator effect') (McLeod, 2008). Although it appeared that the therapist effects favorably affected the treatment outcomes in the current study, it is important to note that therapist/investigator effects have to be recognized and minimized to adequately generalize the findings (Lutz et al., 2007). As Kim et al. (2006) pointed out, "If therapists are treated as fixed, the results are conditioned on the particular therapists included in the clinical trial, thus restricting the conclusions to only those particular therapists in the trial" (p. 162). Lutz and colleagues (2007) suggested some of the actions that can be taken to effectively deal with the therapist effect and maximize the treatment outcomes. First, it is important to understand what characteristics of the therapist and what types of actions s/he took made the treatment effective. From the findings from this study, it appeared that empathy, non-judgmental attitude and acceptance, respecting personal limitation and facilitating individual's spontaneity were identified as some of the important factors. The second action is forming a therapeutic alliance. Although therapeutic alliance is the foundation of any therapeutic process, in DMT, the therapeutic relationship is particularly emphasized as the very embodied

presence of the therapist, the nonverbal interaction, and kinesthetic empathy between the therapist and client. The findings from this study indicated that the kinesthetic experience of empathy, validation and support provided a powerful way through which individuals with chronic pain find a sense of healing.

The last two actions are adherence to the protocol and competence. 'Adherence to the protocol' refers to the importance of recognizing what program works better/best for the specific population and delivering the specific ingredients that work for them. 'Competence' refers to "the extent to which the therapist conducting the intervention took the relevant aspects of the therapeutic context into account and responded to these contextual variables appropriately" (Waltz, Addis, Koerner, & Jacobson, 1993, as cited in Lutz et al., 2015, p.159). The current study identified several factors and mechanisms as well as some contextual conditions that are critical for resilience building in people with chronic pain. Although further study is needed to test and refine this model, the findings provided useful information to consider in designing and conducting clinical protocols for people with chronic pain. Furthermore, some of the characteristics of the therapist identified as positive variables from this study should be considered in clinical training and supervision and included in a future treatment manual for this population.

5.6.6.6 Contextual conditions. Through the secondary analysis of the findings I identified several conditions impacting individuals' involvement in the therapeutic processes. Some of the main conditions included individuals' prior activity level, ability to articulate or alexithymic tendency, percent of time in pain, social support, engagement in the therapeutic aspects of the treatment, and other life pressures.

5.6.6.6.1 Prior activity level. It appeared that individual's prior activity level was a condition that seemed to be particularly related to people's recognition of personal efficacy for physical activity. While the majority of the participants reported that participating in this study had made them realize that their actual physical capacity was higher than they had assumed prior

to the study, a participant who had been physically active prior to coming to this study reported that this was not her case. This participant stated that she had always been physically active and as a result had a high level of awareness of her body's capacity and limitation as well as self-efficacy for physical activities. Therefore we may hypothesize that people whose prior activity level was low may benefit from DMT treatment by having an opportunity to mobilize their body to (re) discover their capacity. This in turn, may help them to develop a more realistic understanding of efficacy for physical activities, which was associated with increased motivation for exercising and reduction of fear-avoidance tendency for physical activity. In addition, it is important to note that individual's baseline level of body awareness and personal efficacy for physical activity should be considered when implementing DMT intervention and predicting its outcome. Furthermore, based on the possible ceiling effect related to this finding, I would recommend that future DMT studies to look into for whom is the DMT more likely to be meaningful and effective.

5.6.6.6.2 Ability to articulate/Alexithymia. Individuals' ability to articulate their experience was associated with some of the factors in therapeutic processes namely self-fulfilling action, separating self from pain, and articulation. Bojner-Horwitz (2004) pointed out that alexithymic characteristics of chronic pain could affect the magnitude of treatment outcomes as well as the accuracy in assessing treatment outcomes. She hypothesized that the alexithymic state triggers vegetative reaction in the brain instead of activation in the limbic system. This might cause individuals to experience difficulty in processing or communicating feelings and ideas through symbols and connect them to a personally meaningful interpretation. All three processes - separating from pain, self-fulfilling action, and articulation - involve the symbolic function of imagery and the ability to contextualize its meaning which requires the operation in limbic system. Hence Bojner-Horwitz's hypothesis may be relevant to the findings from the current study as well. In fact, further analysis showed that the three people who did not report all the three factors also had very little to no mentioning about the use of imagery.

The findings from the Bojner-Horwitz study showed that participating in DMT treatment decreased participants' 'alexithymic movement patterns' and increased symbolic movement expressions along with the awareness of its connection to one's emotions and unconscious ideas. Some of the participants from this study stated expressing themselves through body movement was 'easier' or 'effective' in communicating or articulating their feelings and thought. This finding provides additional evidence to the previous research to advocate using therapeutic modalities that utilize non-verbal expressions or sensorimotor communication as psychological approaches for people with chronic pain.

5.6.6.6.3 Contextual conditions for individuals with highest and lowest percentage of the reported therapeutic factors. The secondary analysis showed that there were five people whose data included 95 – 100% of the therapeutic factors/processes identified from the initial analysis (See Table 13). There are three individuals whose data included only 71% -76% of the identified factors. The contextual conditions the five individuals with top percentage had in common were having been married (100%), a medium to high activity level (80%), strong ability to articulate (80%), medium to high level of social support(100%), high attendance rate (100%) and high level of engagement to the therapeutic aspects of the treatment (80%). In the mean while, characteristics of the three individuals with low percentage showed that they had secondary level education as their final degree (100%), not married (67%), high percentage of pain (80-100% of time) for significant duration (5-10 years, 67%), low activity level (100%), other life stressors (100%), low engagement to the therapeutic aspects of the treatment (100%) and limited social support (100%).

This finding is congruent with previous resilience research findings which indicated that individuals with high positive health protective factors such as family and social support, courageous coping and ability to derive meaning from the experience were associated with higher resilience outcomes (Haase, Kintner, Monahan, & Robb, 2014). Findings from the current study demonstrated that DMT may provide an environment for people with chronic pain to experience

and build positive social support system, which in turn suggest that DMT can be used as an effective resilience-promoting treatment for this population.

5.7 Quantitative Strand

5.7.1 Objective

The purpose of this arm of the study was to answer the following research questions:

RQ1. What is the average change over time in the mean scores for the primary outcomes (resilience, body awareness, and kinesiophobia) throughout the three measurement time points (baseline, week 5 and week 10)?

RQ2. What is the average change in psychological outcomes (stress, mood, and relaxation) and pain intensity from pre to posttest measures for each DMT session?

RQ3. What is the relationship between the following variables: kinesiophobia and self-efficacy, meaning and acceptance, body awareness and kinesiophobia, body awareness and self-efficacy, and growth and acceptance?

RQ4. What is the pre to posttest difference in the patient's self-reported perception of health, disability, body connectivity, mobility, expressivity and pain intensity?

5.7.2 Design of the Quantitative Strand

As described previously, the initial DMT model of resilience developed from phase I was tested and refined through quantitative and qualitative data collection and analyses of a 10-week DMT intervention using *a convergent parallel mixed methods design* (Creswell & Plano Clark, 2011). The goals of the quantitative strand were to a) assess the effects of DMT on resilience promotive factors and resilience related outcomes using standardized instruments and b) explore the mediating relationship between some of the identified predictor variables and the target outcome variables through exploratory analyses.

To accomplish this, a one-group repeated measures design was used with three measurement time points namely baseline, midpoint (week 5), and posttest (week 10). In addition, weekly pre and post-session questionnaires were used to examine the immediate effects of the

DMT treatment. Because of the exploratory nature of this study, the use of a control group was deemed premature at this time.

5.7.3 Primary and Secondary Outcomes

The primary outcome in this study was psychological resilience. In addition, some of the variables that were identified as possible resilience-promotive factors for chronic pain management from the meta-model (Phase I), namely interoceptive awareness, kinesiophobia and a limited number of other psychological outcomes (mood, stress, relaxation and pain intensity) were included as secondary outcome variables. The operational definitions of the primary and secondary outcomes and measurements are described below.

5.7.3.1 Resilience. Resilience is defined as positive adaptation, the ability to maintain or regain psychological well-being and physiological homeostasis despite the adverse effect of chronic pain, and the "realization of greater understanding of one's capacities and new learning that arises as a consequence of one's coping efforts" (Sturgeon & Zautra, 2010, p.106). Resilience is a complex concept and no single scale has been developed that adequately covers the concepts of resilience in chronic pain. Therefore, resilience was measured by the following set of scales.

5.7.3.1.1 Response to Stressful Experience Scale (RSES). RSES is a self-report measure of individual differences in cognitive, emotional, and behavioral adaptive capacities that may contribute to the resilience process. RSES has 22 items with scores ranging from 0 to 88; higher scores represent improvement. RSES measures resilience through the following constructs 1) meaning-making and restoration with scores ranging from 0 to 36; 2) active coping with scores ranging from 0 to 20; 3) cognitive flexibility with scores ranging from 0 to16; 4) spirituality with scores ranging from 0 to 8; and 5) self-efficacy with scores ranging from 0 to 8. A previous study of the psychometric properties of the RSES in a military sample with physical injury reported good psychometric properties with excellent internal consistency of .92 and a sound reliability of .87 (Johnson et al., 2011). Although RSES has not been tested in non-military sample with

chronic pain to my knowledge, the construct of RSES appeared to be most relevant to the specific resilience factors and outcomes in chronic pain management. Also most of the existing resilience measures target measuring personal attributes of children or adolescents and few instrument measures resilience in adults with illness. Thus RSES was chosen to measure resilience in this study.

5.7.3.1.2 COPE inventory. Two subscales from the COPE inventory – 1) acceptance, and 2) positive interpretation and growth, were used (Carver et al., 1989). The two subscales include six questions with scores ranging from 6 to 24. A higher score indicates a better coping. Cronbach's alpha for these subscales in a study with arthritis patients were .75 and .73 respectively (Smith & Zautra, 2008).

5.7.3.2 DMT-related factors for resilience. In order to explore the therapeutic mechanisms of DMT in building resilience, two factors that were identified as possibly playing a unique role in the resilience building process, namely kinesthetic awareness and fear of movement (kinesiophobia), were quantitatively measured.

5.7.3.2.1 Kinesthetic awareness. Kinesthetic awareness in DMT refers to "the ability to sense one's self on both internal and external level or an exquisite attunement to one's self" (Kleinman, 2009, p. 132). In this study, kinesthetic awareness was measured by the construct of interoceptive awareness, which means the sensory awareness that originates from the body's physiological states, processes (including pain and emotion), and actions (including movement) (Mehling et al., 2012). The Multidimensional Assessment of Interoceptive Awareness (MAIA), which is often used for assessment of individual's level of body awareness in mind-body therapies, was used as an instrument. The questionnaire has 32 items with scores ranging from 5 to 135, higher score indicating a higher level of awareness. Cronbach's alphas ranging from .74 to .90 have been found for MAIA in a study with chronic pain patients (Mehling et al., 2013).

5.7.3.2.2 Kinesiophobia. Kinesiophobia refers to "an excessive, irrational, and

debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or reinjury" (Vlaeyen, Kole-Snijders, Rotteveel, Ruesink, & Heuts, 1995, p. 240). Kinesiophobia was measured by the 11-item version of the Tampa Scale for Kinesiophobia (TSK-11). The scores range from 11 to 44, with a higher score indicating a greater level of fear. The TSK-11 has an internal consistency of .79, and a reliability of .81 (Woby, Roach, Urmston, & Watson, 2005).

5.7.3.3 Psychological outcomes. Mood, stress, and relaxation were measured by Visual Analogue Scales (VAS). The VAS is a 100-mm line, the length of which represents a continuum of an experience such as mood, stress, relaxation and pain. The VAS is simple, robust, and sensitive and has yielded reliable results in many types of patients and settings. Although the VAS is unidimensional, it has been found to correlate well with multidimensional scales (Beck, 1991).

5.7.3.3.1 Mood. Mood was measured with a VAS with the verbal anchors 'best mood' and 'worst mood' (Beck, 1991).

5.7.3.3.2 Stress. Stress was measured with a VAS with the following anchors: 'No stress' and 'Extreme stress'

5.7.3.3.3 Relaxation. Perceived relaxation was measured with a VAS with the following anchors: 'Not relaxed at all (Very tense)' and 'very relaxed'

5.7.3.4 Pain Intensity. The impact of DMT interventions on pain intensity was measured by means of an 11-point Numeric Rating Scale (NRS) - on a scale of 0 to 10, with 0 being no pain at all and 10 being the worst pain imaginable, For pain intensity, patients were asked to rate their current pain levels. In addition, they were asked how much pain they had been experiencing during the DMT session. NRS measures tend to be preferred over Visual Analogue Scale (VAS) measures by patients and tend to lead to a lesser amount of missing and incomplete data than VAS measures (Dworkin et al., 2005). Therefore NRS was chosen over VAS for pain

measurement.

5.7.3.5 Participants' perception of DMT intervention's effectiveness. The Patient Global Impression of Change Scale (PGIG) (Guy, 1976) was used to assess the participants' perception of benefit of the DMT intervention at the end of the 10-week intervention. PGIC is recommended by the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) guidelines as a core outcome measure of global improvement with treatment (Dworkin et al., 2005). PGIC is a self-reported, single-item rating scale that asks participants to indicate, "Since beginning participation in the dance/movement therapy program, how would you describe the change (if any) in activity limitations, symptoms, emotions, and overall quality of life, related to your painful condition? Please circle the number below that matches your degree of change since you started the dance/movement therapy program." on a 7-point scale of -3 (very much worse)', 0 (no change), to +3 (very much improved).

5.7.3.6 Participants' perception of change in their movement. Participants' subjective interpretation of change in their movement qualities, and perception of health and disability was measured during the post treatment meeting in which I met with individual participants for the final data collection. Two five-minute video clips (one from session 1 and one from session 10) that display a segment from particular participant's movement during the warm-up exercises were viewed consecutively. Before viewing the video clips, the participants were asked to observe and rate themselves regarding their current self perception on the following items: mobility, connection to body, connection between the body parts, expressivity, pain intensity, disability, and health. Brief explanations about what each item refers to, were provided. For example, 'connection between body parts' was explained as "Your impression of the degree in which your body parts are moving in coordination with each other and your body looks like it is moving in a harmonious way." A NRS was used with a scale of 1 to 10, (higher score representing improvement) to measure the change in self-perception between the session 1 and session 10 (See Appendix C for all quantitative measurements). The participants completed two questionnaires

(one for session 1 and one for session 10). Participants' subjective perception of change was considered as meaningful data.

5.7.4 Data Administration

The following table summarizes which outcome measurements were administered at what time points throughout phase II of this research study.

Table 23. Summary of the quantitative outcome measures

Outcome	Instrument	Subscales	# of items	Time point
Resilience	Response to Stressful Experience Scale (RSES)	1. Meaning-making and restoration 2. Active coping 3. Cognitive flexibility 4. Spirituality 5. Self-efficacy	22	BL(T1) Wk 5(T2) Wk 10(T3)
	COPE Inventory	1. Acceptance 2. Positive reinterpretation and Growth	6	
Body Awareness	Multidimensional Assessment of Interoceptive Awareness (MAIA)	1. Noticing 2. Not-distracting 3. Not-worrying 4. Attention regulation 5. Emotional awareness 6. Self-regulation 7. Body listening 8.Trusting	32	BL(T1) Wk 5(T2) Wk 10(T3)
Kinesiophobia	Tampa Scale for Kinesiophobia (TSK-11)	1. Somatic focus 2. Activity avoidance	11	BL(T1) Wk 5(T2) Wk 10(T3)
Participants' perception of the change	Patient Global Impression of Change Scale (PGIC)	Participants' perception of improvement or change due to DMT intervention	1	Wk 10 (T3)
Psychological	Visual Analogue	Mood, Stress, and Relaxation	3	Weekly

outcomes	System (VAS)			pre & post session
Pain intensity	Numeric Rating Scale (NRS)	Pain	1	Weekly pre & post session
Self-rating of change in movement	Video Self-rating Questionnaire NRS	Mobility, Connection to body, connectivity between body parts, pain intensity, disability, health, expressivity	7	Post-treatment meeting

Total number of questions for the main outcomes – resilience, body awareness and kinesiophobia was 73 and the duration to complete the entire set of questionnaires was 15-20 minutes.

5.7.5 Data Collection Procedures

There were two different time schedules for the quantitative data collection. Primary outcomes related to resilience factors (resilience, body awareness, and kinesiophobia) were measured at three time points – baseline, mid and post treatment intervention - while psychological outcomes (mood, stress, and relaxation) and pain intensity were measured on a weekly basis. For the primary outcome measurement, the participants completed a set of standardized instruments during their baseline visit, after 5^{th} session, and after 10^{th} session. For the psychological outcome measurement, the participants filled out a list of VAS and NRS questionnaires immediately before and after each DMT session.

A limitation should be addressed regarding the quantitative data collection procedure. Due to the limitation of not having extra research staff to assist with the study procedure, I had to administer the data collection myself. Although an effort was made to minimize the effect of "researcher expectancies" (by giving verbal instruction to the participants to give answers that are true to how they actually felt, and by me not being present in the room while people were completing the questionnaires), it is possible that this might have biased the results of the study, as the participants might have given a desired answer for the study.

5.7.6 Data Storage and Security

All data were collected in paper format and labeled using only the participant's PIN. The collected data were stored in a locked secure cabinet at each study site during the data collection period and then were transferred to the Department of Creative Arts Therapies at Drexel University and stored in a locked secure cabinet. All collected data were immediately entered into an SPSS file on a computer that was secured by PGP protection software as well as additional login security. The paper files were stored in a locked secure cabinet in the designated data storage room in College of Nursing and Health Profession research lab at Drexel University.

5.7.7 Data Analysis

Quantitative data analyses were conducted using SPSS and SAS. First, descriptive statistics (means, standard deviations, frequencies, and histograms) were used to examine the sample for distribution of demographic variables (e.g., age, gender, ethnicity, etc.) and pain-related variables (e.g. pain type, pain duration, etc.), and to create a report of the demographic and pain profile of the study sample.

Second, repeated measure MANOVA and/or ANOVA were used to examine the change in the primary outcomes over the 10-week period. An alpha-level of 0.05 was used for decisions regarding level of significance.

Third, for the secondary outcomes (weekly tests) mixed effect models with repeated measures were used to test the fixed effect of time. Paired t-test was used to test the difference before and after each session.

Finally, correlational analyses were performed to examine the relationship between the variables of interest. Ideally, a mediation analysis would have been performed "to identify and explicate the mechanism or process that underlies an observed relationship between an independent variable and a dependent variable via the inclusion of a third explanatory variable, known as a mediator variable" (West & Spring, n.d., Glossary section). However, statistical mediation analysis procedures such as Baron & Kenny's Causal –Steps Test, or Structural

Equation Modeling require a very large sample size for adequate statistical power. This was, unfortunately, not feasible for this study. Therefore, at this phase of the model development, correlation analyses were conducted for preliminary examination of strength of relationship between variables. It is understood that additional clinical trials will need to be conducted (with larger sample sizes) to further test the accuracy of the model developed in this study. Nevertheless, these exploratory analyses are an important first step in model testing.

5.7.8 Quantitative Findings

5.7.8.1 Participant flow. A total of 25 people were recruited and all of them consented. Five people ended up dropping out before starting the study due to sudden illness, scheduling difficulty, or family emergency. One participant withdrew after completing third session because of a change of class schedule. Nineteen people completed the study.

5.7.8.2 Primary outcomes. Change over time for the mean scores of the primary outcomes – resilience, body awareness and kinesiophobia - was examined using repeated measure *MANOVA* or *ANOVA*. Descriptive statistics and boxplots were used to examine distribution of the data.

5.7.8.2.1 Resilience. Change over time was examined for resilience as measured by the RSES and two subscales from COPE throughout the three time points, namely baseline (T1), mid test (T2) and the post test (T3). RSES scores range from 0 to 88 with higher score representing improvement. COPE scores range from 6 to 24 with higher score indicting improvement.

A repeated measure ANOVA for the RSES total score showed that there was a significant difference between the three time points with p = .001. A pairwise comparison indicated that there was a not statistically significant decrease from T1 to T2 (*MD* = -5.474, *SE* = 2.14, *p* = .059) but there was a statistically significant increase from T2 to T3 (*MD* = 7.842, *SE* = 1.603, *p* = .000) (Table 25). The change between T1 to T3 was not statistically significant (*MD* = 2.368,

SE = 1.604, *p* = .472). Table 26 displays the descriptive statistics for each of the subscales of the RSES.

Table 24. Descriptive statistics of RSES Total

Variable	N	Minimum	Maximum	Mean	Std Dev	Skewness
RSESTotalT1	19	47.000	88.000	71.789	12.943	-0.139
RSESTotalT2	19	38.000	88.000	66.316	14.610	-0.091
RSESTotalT3	19	55.000	88.000	74.158	11.335	-0.271

Table 25. Pairwise comparison of RSES score

Time	Time	Mean Difference	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	5.474	2.140	.059	-.175	11.122
	3	-2.368	1.604	.472	-6.603	1.866
2	1	-5.474	2.140	.059	-11.122	.175
	3	-7.842*	1.603	.000	-12.072	-3.612
3	1	2.368	1.604	.472	-1.866	6.603
	2	7.842*	1.603	.000	3.612	12.072

Table 26. Descriptive statistics for subscales of RSES

Variable	N	Minimum	Maximum	Mean	Std Dev	Skewness
MeaningT1	19	1.889	4.000	3.234	0.649	-0.181
MeaningT2	19	1.444	4.000	2.959	0.743	-0.247
MeaningT3	19	2.444	4.000	3.339	0.585	-0.378
ActiveCopingT1	19	2.333	4.000	3.289	0.580	-0.240
ActiveCopingT2	19	1.833	4.000	3.114	0.685	-0.353
ActiveCopingT3	19	2.167	4.000	3.395	0.507	-0.711
CognitiveFlexibilityT1	19	1.667	4.000	3.211	0.705	-0.560
CognitiveFlexibilityT2	19	1.000	4.000	2.947	0.796	-0.531
CognitiveFlexibilityT3	19	2.333	4.000	3.333	0.567	-0.379
SpiritualityT1	19	0.000	4.000	3.395	0.966	-2.666
SpiritualityT2	19	0.000	4.000	3.211	1.045	-1.896
SpiritualityT3	19	0.000	4.000	3.526	0.920	-3.434
SelfEfficacyT1	19	2.000	4.000	3.263	0.653	-0.314
SelfEfficacyT2	19	0.500	4.000	2.868	0.970	-0.811
SelfEfficacyT3	19	2.500	4.000	3.342	0.602	-0.166

A repeated measure *MANOVA* using the five subscales – meaning making, active coping, cognitive flexibility, spirituality and self-efficacy - showed a statistically significant time effect. A repeated measures *ANOVA* for each subscale found a statistically significant effect of time for all the five subscales except for cognitive flexibility. The *p*-values were .001, .012, .055, .026 and .037 for meaning, active coping, cognitive flexibility, spirituality and self-efficacy, respectively. The pairwise comparison results showed that four of the five subscales increased significantly from T2 to T3, namely meaning-making (*MD* = .380, *SE* = .09, *p* =. 002), active coping (*MD* = .281, *SE* = .082, *p* = .009), cognitive flexibility (*MD* = .386, *SE* = .12, *p* = .015), and spirituality (*MD* = .361, *SE* = .11, *p* = .03). However, the change between T1 and T2 was not statistically significant for any of the subscales: meaning-making (*MD* = .275, *SE* = .106, *p* = .054), active coping (*MD* = .175, *SE* = .101, *p* = .296), cognitive flexibility (*MD* = .263, *SE* = .185, *p* = .515), spirituality (*MD* = .184, *SE* = .116, *p* = .389) and self-efficacy (*MD* = .395, *SE* = .211, *p* = .235). The change between T1 to T3 for all subscales was not statistically significant: meaning-making

(*MD* = .105, *SE* = .087, *p* =. 73), active coping (*MD* = .105, *SE* = .071, *p* = .47), cognitive flexibility (*MD* = .123, *SE* = .133, *p = 1*), spirituality (*MD* = .132, *SE* = .107, *p* = .705) and self-efficacy (*MD* = .079, *SE* = .11, *p* = 1). This result was consistent with the findings for the total score.

The absolute value of skewness for Spirituality T1 – T3 was very large indicating an issue with normal distribution for this subscale. Since the distribution of spirituality was skewed, which violates the assumption of *ANOVA*, we performed a Friedman's rank test. The resulting *p*-value was .035, meaning that there was a statistically significant difference between the three time points. The *p*-value of the Friedman's test remained the same (*p* = .035) after removing the outlier.

Table 27. Descriptive statistics of Spirituality (After removing participant ID = 23)

Variable	N	Minimum	Maximum	Mean	Std Dev	Skewness
SpiritualityT1	18	2.500	4.000	3.583	0.522	-1.069
SpiritualityT2	18	1.500	4.000	3.389	0.719	-1.168
SpiritualityT3	18	3.000	4.000	3.722	0.352	-0.915

The *MANOVA* test on the two subscales of COPE, namely acceptance and growth, showed a statistically significant result with a *p*-value of .001. A repeated measure ANOVA on each subscale showed a statistically significant effect of time for both subscales. The *p*-values for acceptance and growth were both .003. The pairwise comparison results indicated that increase in acceptance was statistically significant from T1 to T3 (*MD* = .632, *SE* = .17, *p* = .005); and increase in growth was statistically significant both from T1 to T3 (*MD* = .539, *SE* = .142, *p* = .004) and from T2 to T3 (*MD* = .382, *SE* = .145, *p* = .05). Since the distribution of growth and acceptance was skewed for some time points, which violates the assumption of ANOVA, we performed a nonparametric test for both sub scales. Both tests showed a significant result and

were consistent with ANOVA results. The corresponding p-value of Friedman test was .002 for acceptance and .005 for growth.

Table 28. Descriptive statistics for subscales of COPE

Variable	N	N Miss	Minimum	Maximum	Mean	Std Dev	Skewness
AcceptanceT1	19	0	2.000	4.000	3.105	0.737	-0.172
AcceptanceT2	19	0	1.500	4.000	3.500	0.782	-1.462
AcceptanceT3	19	0	2.500	4.000	3.737	0.452	-1.673
GrowthT1	19	0	1.750	4.000	2.934	0.777	-0.049
GrowthT2	19	0	1.000	4.000	3.092	0.855	-1.042
GrowthT3	19	0	2.250	4.000	3.474	0.546	-0.709

In summary, there was a significant improvement in total scores and most subscales of resilience from either T1 to T3 or T2 to T3. However in general, there was a statistically significant decrease of most of the scores from T1 and T2; then a statistically significant increase from T2 to T3 in most of the subscales.

5.7.8.2.2 Interoceptive awareness. Interoceptive awareness was measured by the MAIA. The total score for the MAIA ranges from 5 to 135 with a higher score representing improvement. The range of scores for the subscales of the MAIA is 0 to 20 for noticing (higher score representing improvement), 0 to 15 for not distracting (higher score representing worsening), 5 to 10 for not worrying (higher score representing worsening), 0 to 35 for attention regulation (higher score representing improvement), 0 to 25 for emotional awareness (higher score representing worsening) , 0 to 20 for self-regulation (higher score representing worsening), 0 to 15 for body listening (higher score representing worsening) and 0 to 15 for trusting (higher score representing worsening).

Table 29 shows the descriptive statistics for the MAIA total score. A repeated measures ANOVA found that there was no statistically significant change over time for this outcome (p = .144).

Table 29. Descriptive statistics of MAIA total score

Variable	N	N Miss	Minimum	Maximum	Mean	Std Dev	Skewness
MAIATotalT1	19	0	75.000	159.000	109.579	21.788	0.716
MAIATotalT2	19	0	50.000	139.000	107.842	22.853	-0.720
MAIATotalT3	19	0	81.000	158.000	119.105	21.937	0.017

As for the subscales, a repeated measures MANOVA showed that the difference between time points was significant for the eight subscales (p = .007). When evaluating the eight subscales separately with a repeated measures ANOVA only *attention regulation* had a statistically significant change over time (p = .021). Pairwise comparison showed a statistically significant change for T1 toT3 (MD = .586, SE = .185, p = .016) and T2 to T3 (MD =. 586, SE = .210, p = .036).

Table 30. Descriptive statistics of subscales from MAIA

Variable	N	Minimum	Maximum	Mean	Std Dev	Skewness
NoticingT1	19	2.500	5.000	3.974	0.768	-0.365
NoticingT2	19	1.250	4.750	3.645	0.933	-1.114
NoticingT3	19	2.000	5.000	4.158	0.800	-0.989
NotDistractingT1	19	0.333	3.333	1.702	0.942	0.326
NotDistractingT2	19	0.667	3.000	1.860	0.660	0.181
NotDistractingT3	19	0.000	3.333	1.895	0.868	-0.097
NotWorryingT1	19	0.333	3.667	2.351	0.835	-0.754
NotWorryingT2	19	1.333	5.000	2.404	0.979	1.197
NotWorryingT3	19	1.000	5.000	2.667	0.962	0.976
AttentionRegT1	19	1.286	5.000	2.977	1.081	0.623
AttentionRegT2	19	1.000	5.000	2.977	0.876	0.207
AttentionRegT3	19	2.429	5.000	3.564	0.805	0.292
EmotionAwareT1	19	2.600	5.000	3.958	0.735	-0.158
EmotionAwareT2	19	1.600	5.000	3.989	0.958	-0.916
EmotionAwareT3	19	2.000	5.000	4.232	0.922	-1.391
SelfRegulateT1	19	1.750	5.000	3.382	1.045	0.099
SelfRegulateT2	19	1.000	5.000	3.342	1.055	-0.992
SelfRegulateT3	19	1.500	5.000	3.842	1.015	-0.633
BodyListeningT1	19	0.000	5.000	2.965	1.281	-0.383
BodyListeningT2	19	1.000	5.000	3.421	1.201	-0.382
BodyListeningT3	19	1.667	5.000	3.614	0.938	-0.088
TrustingT1	19	1.333	5.000	3.649	1.245	-0.405
TrustingT2	19	1.000	5.000	3.368	1.071	-0.443
TrustingT3	19	2.000	5.000	3.895	1.122	-0.621

In summary, there was no statistically significant difference between time points for the total score of MAIA as well as most of the subscales. Only one subscale, *attention regulation* indicated a statistically significant improvement over time.

5.7.8.2.3 Kinesiophobia. Kinesiophobia was measured by the TSK-11. The score for the TSK-11 ranges from 11 to 44 with a lower score representing improvement. Table 31 shows the descriptive statistics for each time point for the TSK-11 total score.

Table 31. Descriptive statistics of TSK total scores

Variable	N	N Miss	Minimum	Maximum	Mean	Std Dev	Skewness
TSKTotalT1	19	0	14.000	35.000	25.263	6.911	-0.227
TSKTotalT2	19	0	14.000	41.000	25.368	8.139	0.448
TSKTotalT3	19	0	14.000	33.000	22.474	5.348	0.456

The test of within-subject effects showed that the difference between the three time points is statistically significant with *p*-value of .041. The pairwise comparisons showed that there is a statistically significant decrease from T1 to T3 (*MD* = 2.789, *SE* = .975, *p* = .031). In summary, the results indicated that there was a statistically significant decrease in the total score of TSK-11.

5.7.8.3 Psychological outcomes and pain intensity (Weekly test results). A set of psychological outcomes namely mood, stress, and relaxation were measured by VAS, a 100-mm line, the length of which represents a continuum of an experience. For mood and relaxation, a higher score represent improvement while a higher score in stress meant worsening. Pain intensity was measured by an 11-point Numeric Rating Scale (NRS) - on a scale of 0 to 10, with 0 being no pain at all and 10 being the worst pain imaginable.

5.7.8.3.1 Change between the week 1 and week 10 in psychological outcomes and pain intensity. A mixed effect models with repeated measures was used to examine if there was a time effect.

Pain. There was a statistically significant decrease in post-session pain scores over time, with a *p*-value of .03. The corresponding plot is shown below:

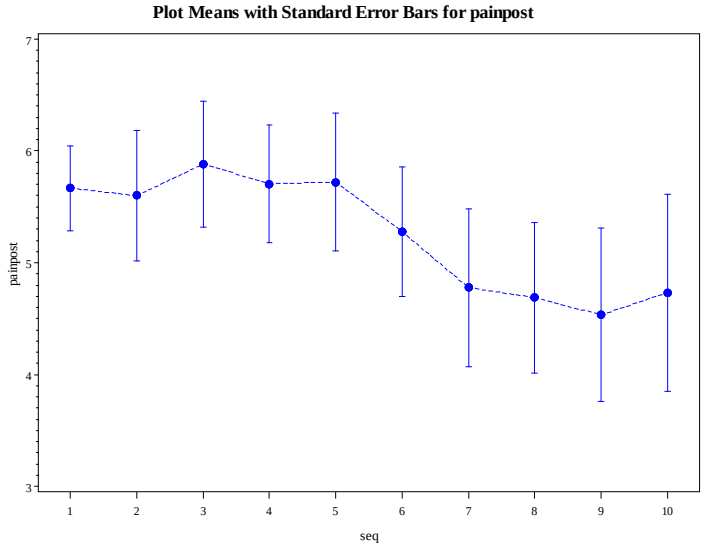


Figure 20. Plot of pain post-session scores

The estimate of time effect was -.1521, which means that, on average, post-session pain score decreased by .1521 after each treatment session. However the change in pre-session pain score over time was not statistically significant with a p-value of.127.

Mood. Both graphs of pre-session and post-session mood scores show some increasing trend. The corresponding *p*-values were .3451 and .1105. There was a noticeable drop for mood post score at session 4, which suggests something unusual might have happened during the 4th session (Figure 21 and 22).

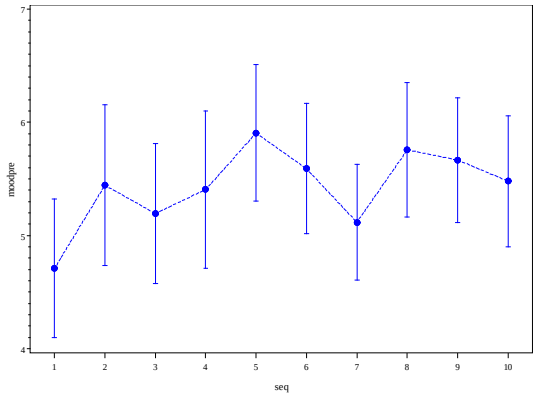


Figure 21. Plot of mood pre-session scores

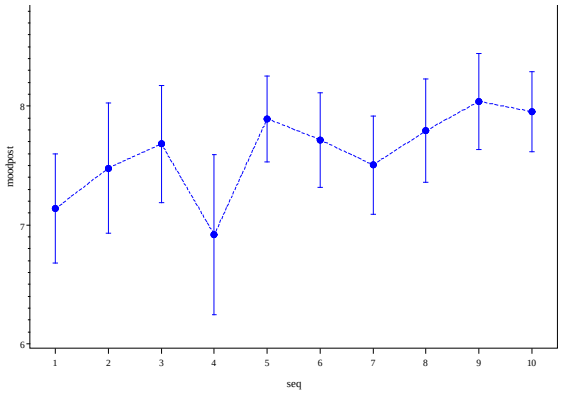


Figure 22. Plot of mood post-session scores

Stress. Both the plot and *p*-value of stress pre score showed no change over time, while the plot of stress post scores showed a decreasing trend. The corresponding *p*-value was .95 for stress pre and .055 for stress post, and the estimate of the time effect was .004 for stress pre and negative -.121 for stress post.

Relaxation. Both graphs and test of relaxation pre and relaxation post showed no changing trend over time. The corresponding *p*-value was .887 for relaxation pre and .477 for relaxation post, and the estimate of the time effect was -.0102 for relaxation pre and .0413 for relaxation post.

5.7.8.3.2 Immediate effect of DMT session on the mood, stress, relaxation and pain. A paired t-test was used to compare scores of mood, stress, relaxation and pain before and after each DMT session. The results are summarized in the table below.

Table 32. Pre-session and post-session scores on pain and psychological outcomes

Variable (post - pre)	Mean	Std Dev	95% CL Mean		DF	t Value	p
Mood	2.1313	2.4391	1.7575	2.5051	165	11.26	<. 0001
Stress	-2.1859	2.8029	-2.6397	-1.7321	148	-9.52	<. 0001
Relaxation	2.4958	2.6231	2.0951	2.8966	166	12.3	<. 0001
Pain	-0.9581	2.0101	-1.2652	-0.651	166	-6.16	<. 0001

The immediate effects of DMT session were significant for mood (*MD* = 2.131, *SD* = 2.439, *p*< .0001), stress (*MD* = -2.186, *SD* = 2.803, *p*< .0001), relaxation (*MD* = 2.496, *SD* = 2.623, *p*< .0001), and pain (*MD* = -.958, *SD* = 2.010, *p*< .0001).

In summary, the 10-week DMT intervention reduced pain over time. The time effects for the psychological outcomes – mood, stress and relaxation - were not statistically significant. However, some of the plots showed that there were some trends of improvement. DMT did have

an immediate effect on mood, stress, relaxation and pain, and these treatment benefits were statistically significant.

5.7.8.4 Participants' Perception of Change. PGIC was used to measure the participants' perception of change. The score ranged from -3 (very much worse), 0 (no change), to +3 (very much improved). At week 5, 52.7% (n = 10) of people reported doing 'moderately better to a great deal better'; 36.8% (n = 7) reported 'little to somewhat better'; and 10.5% (n = 2) reported no change to almost the same. At week 10, 68.4%(n = 13) reported doing 'moderately better to a great deal better' and 31.6%(n = 6) reported 'little to somewhat better', indicating that more people noticed a greater level of improvement over time.

Table 33. Descriptive statistics of PGIC

Variable	N	Minimum	Maximum	Mean	Std Dev	Skewness
PGICT1	19	1.000	7.000	4.474	1.806	-0.490
PGICT2	19	3.000	7.000	5.237	1.378	-0.004

Table 34. PGIC change over time

	1-2 No change to Almost same	**3-4 Little to Somewhat better**	**5-7 Moderately better to A great deal better**
T1 Week5	10.5% N = 2	36.8% N = 7	52.7% N = 10
T2 Week10	0% N = 0	31.6% N = 6	68.4% N = 13

In summary, the majority of participants reported a moderate to great improvement over the 10-week intervention period. A larger number of people reported a greater level of change toward the end of the treatment period.

5.7.8.5 Video Self-rating score. Participants were asked to rate themselves on seven variables – mobility, mind-body connection, body part connection, pain, disability, health and expressivity - while watching video clips of themselves. Participants watch a clip from session 1 and one from session 10. Each of the variables was measured by a 0-10 NRS with higher score representing improvement. A paired t-test was used to test the difference between T1 and T2.

5.7.8.5.1 Mobility. The mean change between session 1 and session 10 (*M = 1, SD = 2.14)* was not statistically significant ($p = .064$).

5.7.8.5.2 Mind-body connection. The mean change between session 1 and session 10 (*M =.39, SD = 2.97)* not statistically significant.

5.7.8.5.3 Body part connection. The mean change between session 1 and session 10 (*M =1.11, SD =2.87)* was not statistically significant ($p = .59$).

5.7.8.5.4 Pain. The mean change between session 1 and session 10 (*M =-.28, SD = 3.9)* was not statistically significant ($p = .76$).

5.7.8.5.5 Disability. Because of skewed data distribution for this variable, a Wilcoxon signed-rank test was used. The difference between T1 and T2 (*M =. 28, SD = 1.84)* was not statistically significant ($p = .53$). Even after removing an extreme outlier, the difference remained nonsignificant (*M =.12, SD* = .78, $p = .54$)

5.7.8.5.6 Health. The mean change between session 1 and session 10 (*M = . 7 , SD = 1.75)* was not statistically significant ($p = .12$). .

5.7.8.5.7 Expressivity. The mean change between session 1 and session 10 (*M =1.22, SD = 2.82)* was tested not statistically significant ($p = .08$).

In summary, no significant differences were found between T1 and T2 measurements for mobility, mind-body connection, body part connection, pain, disability, health and expressivity.

5.7.8.6 Exploration of relationship between model variables. A Spearman correlation test was performed to test the relationship between a limited number of variables that were identified in the preliminary model as potential mediator variables

5.7.8.6.1 Kinesiophobia and Self-efficacy. In the preliminary model, kinesiophobia was identified as a potential moderator variable for self-efficacy. Based on this dataset, however, the relationship between kinesiophobia (TSK-11 total score) and self-efficacy (a subscale from RSES) was not statistically significant (ρ = -.15, p = .25).

5.7.8.6.2 Meaning making and Acceptance. The relationship between meaning (a subscale from RSES) and acceptance (a subscale from COPE) was not statistically significant (ρ = .07 p = .60).

5.7.8.6.3 Body awareness and Kinesiophobia. The relationship between body awareness (MAIA) and kinesiophobia (TSK-11) was not statistically significant (ρ = .04, p = .79).

***5.7.8.6.4 Body awareness and Self-efficacy*.** There was a positive relationship between body awareness (MAIA) and self-efficacy (a subscale from RSES) scores (ρ = .51, p <. 0001), meaning as body awareness score increase, self-efficacy score increases as well. This relationship was of moderate strength and was statistically significant.

5.7.8.6.5 Growth and acceptance. The relationship between growth (a subscale of COPE) and acceptance (a subscale of COPE) was tested not statistically significant (ρ = .19, p = .15).

In summary, the correlational analyses revealed one significant relationship, namely between body awareness and self-efficacy**.**

5.7.9 Discussion of the Quantitative Findings

Results from the quantitative analysis showed an interesting pattern of changes in the resilience scores over time (i.e., overall scores decreasing at T2 compared to T1 and then showing a statistically significant increase at T3 compared to T2). There was a statistically significant increase in total and most of subscale scores of RSES from T2 to T3: active coping (p = .012),

meaning making (p = .001), self-efficacy (p = .037), spirituality (p = .026), acceptance (p = .002) and growth (p = .005) except for cognitive flexibility (p = .055) throughout the three time points ($p < 0.05$). Results from COPE scale indicated that there as a statistically significant change in acceptance between T1 to T3 (p = .005); and increase in growth was statistically significant both from T1 to T3 (p = .004) and from T2 to T3 (p = .05). It is noteworthy that the overall RSES score dropped at the second measurement point (5-week) compared to the baseline measurement and then increased again by the post-test measurement point. A possible explanation for the initial decrease in self-reported resilience might be due to the process of "systematic therapeutic learning", a pattern identified by Cassileth et al. (1994). Systematic therapeutic learning refers to the principle that sufficient amount of treatment exposure is required for an individual to get familiar with the therapy medium before individuals experience the effectiveness of the treatment that is significant enough to be perceived or measured (as cited in Goodill, 2005, p.175). Goodill (2005) discussed the importance of this principle in the DMT therapeutic process. In addition, although the change of RSES scores between T2 and T3, and COPE score between T1 and T3 were statistically significant, the mean differences were minimal. Thus these changes may not have been clinically meaningful.

No statistically significant improvements were found for body awareness, except for one subscale, namely attention regulation (p = .021), which refers to the ability to sustain and control attention to body sensations. A potential obstacle to obtaining statistical significance was the brevity of the treatment period in the current study. Qualitative data indicated that more than a weekly 10-week treatment period might be helpful in maximizing the treatment effect. This factor is further discussed in the Limitations section later in this chapter. Another possibility is that the participants might have overestimated their body awareness at the baseline. As participants specifically worked on different aspects of body awareness throughout the treatment period, they likely started to develop a more accurate understanding of the various aspects of body awareness.

This may have led to more moderate scores at the subsequent measuring points. A DMT meta-analysis study by Ritter and Low (1996) reported similar findings. According to their findings, the average effect of DMT on body awareness is moderate (r = .34). A study by Kavaler (1973) found that a ceiling effect of the scores of body-awareness were very high, leaving little room for improvement at post-test (as cited by Ritter & Low, 1996). Bojner and Horwitz and colleagues (2006) utilized a projective test (use of self-figure drawing) to measure the change in chronic pain patients' body awareness and found that significant differences were seen in the variables "amount of body details" and "amount of paper use in percent" between the treatment group and controls after DMT intervention. Their study results suggest that using a visually oriented measurement compared to verbal questionnaires might be a more effective way to measure body awareness in people with chronic pain. Therefore future studies should consider utilizing visually oriented measurement to measure body awareness in people with chronic pain.

The results showed that the decrease in participants' fear of movement (Kinesiophobia) scores was statistically significant. To my knowledge, no prior DMT studies have empirically examined the impact of DMT on kinesiophobia in people with chronic pain. Studies from adjacent fields report findings suggesting that interventions using physical movement or psychotherapeutic treatment may have a positive impact on reducing kinesiophobia. For example, a non-RCT study conducted by Kernan & Rainville (2007) reported that 68 chronic back pain patients who participated in a quota-based exercise program showed a decrease in kinesiophobia (r = .59, p <.001). Results from an RCT study with a cognitive behavioral intervention for 253 participants showed that the intervention was successful in reducing fear avoidance beliefs (MD = 11.08, SD = 6.37, p =.05) but the change for kinesiophobia was not significant (Linton & Ryberg, 2001). Results from a study with a multidisciplinary program consisting of motor training integrated with cognitive–behavioral therapy reported a significant effect of the intervention on kinesiophobia (F = 7.736, p = 0.01) (Monticone et al., 2014). Although there are some similarities between DMT and the above listed treatment approaches, DMT's therapeutic factors and

mechanisms are distinct from these modalities. Therefore, future studies that further investigate DMT's effect on kinesiophobia using a control group might be useful.

The findings from this study should be interpreted with caution. Although the change in kinesiophobia was statistically significant, the mean difference between T1 and T3 was 2.79. It is reported that a reduction of less than four points on TSK measures is not considered important to patients (Woby et al., 2005). Furthermore, since these results are based on the findings of a small, non- controlled trial, further exploration is needed.

The results from the Patient Global Impression of Change Scale showed that participants' perception of improvement since starting participation in the DMT treatment increased over time, with 52.7% of the participants reporting feeling 'moderately better to a great deal better' at week 5 versus 68.4% at week 10.. This finding indicates that it may take some time for people to experience change. Again, this pattern might be an indication of systematic therapeutic learning as discussed previously.

Weekly test results showed that DMT had a beneficial impact on pain intensity over time ($p = .03$). This was an important finding given the fact that many participants had had chronic pain for a long period of time. However, it is reported that an average a reduction of approximately two points on the NRS is needed for this change to be clinically important (Farrar, Young, LaMoreaux, Werth, & Poole, 2001). Furthermore, it is equally important to note that we only found a statistically significant decrease over time for the post-session pain scores but not for the pre-session scores. This means that participants' 'default' pain intensity might not have been affected by the treatment yet it appears that their ability to utilize DMT treatment to minimize pain perception improved over time.

Weekly test results for the psychological outcomes showed immediate improvements (i.e. pre to postsession) but the analyses did not indicate statistically improvements over time. There is a possibility that this phenomenon was related to the fact that nine out of the 19 patients reported encountering new life stressors while they were enrolled in the study. Three people reported

dealing with a new health issue (diagnosed with other serious medical condition or started investigating a concerning physical symptom), four people reported having a family crisis (sudden illness in a family member and a family member being faced with a very challenging life circumstance), one person had to relocate two times during the 10-week period, and one person was going through much stress while trying to arrange her living situation after her pending retirement. The presence of these life stressors might be associated with the minimal change in the scores over time. However, it is worth noting that while not statistically significant, there were increasing trends in mood and stress scores and the significance of the immediate effect on the psychological outcomes was quite strong (mean difference of 2.13, -2.19, 2.50, for mood stress and relax respectively with $p<.0001$ for all three variables), which suggests that a long-term exposure of treatment may be able to create a level of change that is statistically detectable.

Correlational analyses between a limited number of variables that had been identified in the preliminary model (Phase I) as potential moderator variables only found one statistically significant relationship, namely between body awareness and self-efficacy. As body awareness increased, self–efficacy increased. Since the identification of relationships to be examined was based on the phase I model which was derived from literature and interviews, it is possible that the actual relational patterns identified from the clinical experiences of the particular sample in this study might be different.

In summary, the results from quantitative findings showed that there were some changes that were statistically significant; however the changes were too small to interpret the results as a clinically meaningful. It is important to acknowledge, however, that the benefits of DMT may not have been accurately captured by the quantitative measurements especially given a clear indication of improvement in the qualitative data. This suggests that using a mixed methods research design that utilizes various sources of data and data collection and analysis techniques should be strongly considered in conducting a DMT study.

5.8 Integration of Qualitative and Quantitative Findings

An important component of mixed methods research is the integration of the two datasets. Therefore, a question at this stage of analysis was: “To what extent do the quantitative and qualitative results converge/diverge and how do they converge/diverge?” A joint display of comparison was created to assess this question as shown in Table 35. In this display, variables from the quantitative results are shown in the vertical dimension to be compared with the qualitative themes on the horizontal dimension (Creswell & Plano Clark, 2011). Quantitative findings in this study were limited by including a select number of variables in the model developed in phase I. This was needed to avoid instrument burden. On the other hand, the qualitative procedure more freely allowed additional insights to emerge regarding the DMT process as well as therapeutic benefits as reported by the participants.

Table 35. Joint display of quantitative and qualitative finding

Quantitative Variables	Mean differences & statistical significance	Quant & Qual Congruency	Qualitative Themes and Quotes
Resilience • Meaning-making and Restoration	Change from T2-T3[1] Significant *MD* = .380 *p* = .002	Congruent	*'Meaning-making', 'restoration of self'* "You get to "know" your pain in different levels . . . . to translate its meaning and how it affects me and find a healing in the sense that there is a chance to see yourself and your pain from a different perspective and an angle". (D3)
• Active Coping	Significant *MD* = .281 *p* = .009	Congruent	*'Active coping', 'self-management', 'feeling in charge', 'motivation for health'* "It made me think that I'm not going to just sit around and complain, feeling bad for myself but get up and do it. I don't dwell on pain." (B5)
• Cognitive Flexibility	Significant *MD* = .386 *p* = .015	Congruent	*'New perspective', 'creativity', 'recognizing options', 'new ways of doing things'* "It opened up different ways of thinking about things."(D2)
• Spirituality	Significant *MD* = .316 *p* = .03	Congruent	*'Spirituality', 'enlightenment'* "It sort of is lifting the spirit within the body. It's an expression of spirit" (C4)
• Self-efficacy	Positive trend although not significant *MD* = .474 *p* = .059	Congruent	*'Self-efficacy', 'accomplishment/mastery', 'control', 'overcoming challenges', 'If put my mind to it, I can do anything'* "It made me think that if I put my mind to it, I can do anything . . . . realizing how far I have come along and what I have accomplished… it made me think about what my body can do still and to think that I can do it" (B4)

[1] The change in RSES was statistically significant between T2-T3, but not significant between T1-T3.

Table 35 - continued

• Acceptance	Significant *MD* = .632 *p* = .002	Congruent	***'Acceptance of pain', 'reconciliation with body', 'doing as much as I can', 'integration'*** "We can uplift our spirits doing our movements, learn and be accepting to what we are going through and we accept and assure that it's okay." (B2)
• Positive Reinterpretation and Growth	Significant MD= .539 p= .005	Congruent	*'Finding positive in negative', 'meaning transformation', 'new perspective', 'growth'* "Because I still have a lot to be grateful for. So I am not going to look at sadness when I have greatness. I've changed for the better."(A5)
Body Awareness	Change from T1-T3		
• Noticing	Not significant MD=.184 p= .641	Discrepant	'Noticing', *'body awareness',* "I noticed that my mind and body function on a tangent-extremes. . . . I realized that my movements are strong and fast-paced." (D3)
• Not-distracting	Not significant MD= .193 p= .618	Discrepant	*'Mindfulness'* "I'm in pain but it is okay. I don't show it. So I was just doing what I do, closing my eyes walking… accepting everything, come to terms with it." (B5)
• Not-worrying	Not significant MD= .316 p= .774	Discrepant	'Acceptance', 'resilience', 'focusing on the positives' "Although I can be in pain, there is a way that I can deal with it and still not be sad, upset or mad. You can still keep a smile on your face" (B2)
• Attention Regulation	Significant MD= .586 p= .016	Congruent	*'Here-and-now focus', 'being in the moment', 'absorption'* "It puts you in a different state of a bubble, putting everything aside . . . . the pain might be still there, but it's okay . . . you come to the right tune with the frequency of the music and you are having fun dancing with people. . . . You actually experience those things here-and-now." (A1)
• Emotional Awareness	Not significant MD= .274 p= .360	Discrepant	*'Emotional awareness'* "I believe I am more aware, both physically and emotionally."

• Self-regulation	Not significant MD= .461 p= .249	Discrepant	*'Modulate/adapt', 'self-regulate'* "I seem to notice things better. . . .when I was feeling upset, I noticed that I was breathing from up here [pointing to her chest], but I did know from the class to just try to breath to down here[pointing to her abdomen], try to calm down and take some deep breath." (D1)
• Body listening	Not significant MD= .649 P= .281	Discrepant	***'Being in touch with body', 'sensitive to body'*** "Now that I am more in touch with myself, I am more aware and more sensitive. Just trying the communication with my body, the communication and stay on top of it." (A3)
• Trusting	Not significant MD= .246 P=1.00	Discrepant	'Safety and trust' "I gained a better understanding of my body. I felt safe and at home in my body." (C4)
Kinesiophobia • Somatic Focus	Change from T1-T3 Not significant MD= 0.2 p= .326	Not applicable	Not identified
• Activity Avoidance	Significant MD= .298 P= .048	Congruent	'*Reduced fear-avoidance', 'do it in spite of'* "I am trying not to limit myself. . . . I try not to worry about what 's going to happen to me if I do it and just do it. . . . cause I know that it might hurt but it's not going to "hurt" me." (C2)
Pain intensity	Significant (p= .03)	Congruent	*'Pain reduction'* "Moving around my body helped me to relieve some of my pain. . . . it helps me deal much better with my pain" (A3)
Psychological outcomes • Mood	Over time (OT) Immediate (I) OT: Not Sig. (p= .115) I: Significant (p< .0001)	Congruent (Immediate effect)	*'Improving mood', 'positive emotions-joy, happiness, freedom, love, peace, hope, gratitude, humor', 'uplifting'* "When you come here, your whole mood changes because I know I am going to do something fun and joyful." (B6)
• Stress	OT: Not Sig. (p= .055) I: Significant	Congruent (Immediate effect)	*'Stress and anxiety relief'. 'stress management', 'releasing negative emotion'*

	p< .0001		"It helped me to calm, not to stressed or worried. It brings my heart bit down and helps with my anxiety as well." (A6)
• Relaxation	OT: Not Sig. (p= .47) I: Significant p< .0001	Congruent (Immediate effect)	*'Relaxation', 'finding serenity within', 'release'* "Every time I left, I felt completely relaxed. It was like all the stress was going away." (D2)

Correlations	**Spearman correlation & p-values**	**Quant & Qual Congruency**	**Reasoning and Qualitative Quotes**
• Kinesiophobia & Self-efficacy	Not Significant ρ= -.1544 p = .2515	Discrepant	Participants reported that recognizing personal efficacy for physical activity enabled them to reduce fear-avoidance tendency: "I've been trying things I used to avoid knowing that it is okay and I can actually do more . . . . Before I wouldn't event want to give it a try but I've been doing a lot more of things I used to not be able to do." (C2)
• Meaning making & Acceptance	Not Significant ρ = .0711 p = .5999	Discrepant	Participants reported the effect of movement narratives on meaning making and its influence on a sense of acceptance: "To go through my story from the beginning to the end . . . . I kept thinking that there are worse things in life and how I have tried to deal with it as best as I can. And that's what matters, not giving up… Well, that's my story so there are parts of it that I don't really like but that's me and my life, so just accept that this is the way it is and the way life is." (D1)
• Body awareness & Kinesiophobia	Not Significant ρ = .0364 p = .7879	Not applicable	Not identified
• Body awareness & Self-efficacy	Significant ρ = -.5091 p<. 0001	Congruent	Participants reported that the experience of increased body awareness (noticing strength and capacity for activity, more realistic perception of pain intensity, ability to self-regulate attention and adapt) instilled confidence in self-management of pain: "I realized that I am still capable of moving and doing things that I may not have thought I was before. It motivated me to keep it up and feel confident that I could do these things for myself." (C3)
• Positive	Not Significant ρ = -.1926	Discrepant	Participants reported that reflecting on and recognizing the improvement through narrative

reinterpretation and growth & Acceptance	p = .1511		exploration and refocusing on the positives instead of negatives allowed them to have a sense of acceptance: "I actually learned to accept it because of the body and the movements that we created for ourselves and describing how our pain was. It also made me feel like it wasn't that bad even though it hurt just knowing that somewhere in here there's someone else that is in a lot of pain also. That helped me to be able to accept the pain and learn to better deal with the situation." (B2)

The joint display of comparison showed congruency in most of the resilience subscales except for self-efficacy. Although the improvement in self-efficacy was not statistically significant (MD = .474, p = .059) the data demonstrated a clear trend for improvement. Self-efficacy was one of the salient themes related to both process (activating self-agency) and outcome (being in charge) of DMT treatment in the qualitative data. Secondary analysis of qualitative data indicated that 82% of the participants reported either an experience of or improvement in self-efficacy through DMT intervention. It appears that this discrepancy might be due to a ceiling effect in quantitative reporting as the mean score of self-efficacy at baseline was high, namely 3.26 on a 0-4 scale.

There were discrepancies between the quantitative and qualitative datasets for most of the body awareness subscales. There was congruency for only one variable, 'attention regulation'. The discrepancy of results might be due to the magnitude of the change being large enough to be detected in a quantitative measure. Indeed, some of the themes in qualitative data such as 'not distracting' and 'self-regulation' were present yet not ubiquitous across the data. Therefore it might be possible that the participants' body awareness was still at an early development stage by the time of treatment completion and longer treatment duration is needed to see a quantitatively measurable level of change.

DMT treatment benefits for 'activity avoidance' were affirmed by both qualitative and quantitative findings. The qualitative arm further explained what factors might be related to the decrease of activity avoidance. Participants described that self-directed structure of DMT sessions allowed them to be self-motivated to spontaneously participate in the movement activities. Watching other people engaging in activities and the joy of moving together with others further encouraged them to stay motivated and sometimes endure personal threshold for pain. While engaging in the movement activities participants often realized that their capacity for movement is greater than they had previous perceived. The recognition of the personal efficacy for physical activity coupled with movement as a pain-reducing, and pleasurable experience enabled them to change their prior beliefs about physical capacity and movement related pain. This change of cognitive structure reduced their

fear avoidance tendency toward physical exercise. Furthermore the enjoyment of the movement motivated them to seek out more opportunity to engage in physical activities.

There were consistent findings between both quantitative and qualitative data on the reduction of pain intensity, and immediate treatment benefits for mood, stress and relaxation. Even though the immediate effects of DMT on the psychological outcomes were convincing in both qualitative and quantitative arms, the changes over time were not affirmed quantitatively. As discussed earlier, a possible assumption for this phenomenon was the emerging of other life stressors during the treatment period. Qualitative data showed that there were identification of these stressors and participants actually had been utilizing DMT treatment to receive support and to better cope with those circumstances. Low attrition rate (5%, $n = 1$) and high attendance (70%, n = 15 of people completing 9-10 sessions) of the study might support participants' accounts on using DMT as a resource to manage stress. In addition, the fact that there was a positive trend for some of the psychological outcomes' quantitative findings (i.e. stress and mood) over time coupled with strong qualitative data might be seen as an indication of possible long term effect of DMT in these outcomes if implemented for a substantial amount of time.

Figure 23 displays the final model diagram after the integration. Due to the limitation in visually displaying detailed findings, the proposed phase II model mainly depicts the concepts and relationships between them that had been derived from the qualitative findings; those variables that were confirmed statistically significant by quantitative analysis were indicated by placing an asterisk symbol (i.e., *) next to the text.

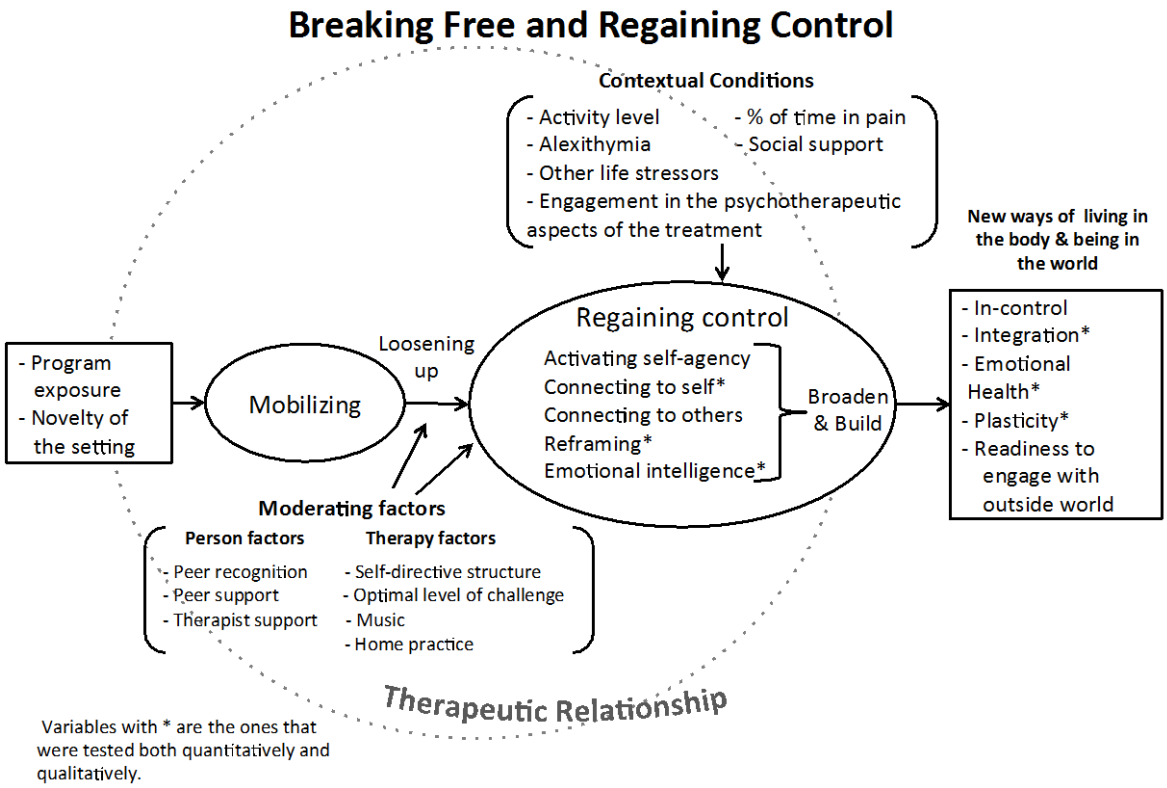


Figure 23. Final clinical model

5.8.1 Validity/Legitimation for integration

Using mixed methods can help researchers to complement the limitations of each method. However validity issues in mixed methods can be complex. Johnson and Chriasense (2010) described that in mixed methods research (MMR), inferences are drawn from both qualitative and quantitative components of the study and should be integrated into a "meta-inferences" (p. 309). Onwuenghbuzie and Johnson (2006), identified nine validation/legitimation issues associated with mixed methods designs: sample integration, inside-outside, weakness minimization, sequential, conversion, paradigmatic mixing, commensurability, multiple validities, and political. Among these various types of validity four types apply to this study, namely inside-outside validity, weakness minimization

validity, sequential validity, and multiple validities validity.

5.8.1.1 Inside-outside validity. Inside-outside validity refers to "the extent to which the researcher accurately understands, uses, and presents the participants' subjective insider views…. and the researcher's objective outsider view." (Johnson & Chriasense, 2010, p. 309). Member checking is a suggested strategy to obtain an insider view. However, in this study, member checking could not be conducted due to the limited time frame of the study. Another suggested strategy to obtain outside validity is peer reviews. Dissertation committee members and a colleague provided feedback and suggestions in the process of interpretations being made, the conceptualizations and relationship between the data and the conclusions to achieve outside validity.

5.8.1.2 Weakness minimization validity. This validity refers to "the extent to which the weakness from one approach is compensated by the strength from the other approach" (Onwuegbuzie & Johnson, 2006, p. 57). This validity can be maximized in MMR especially "when a researcher uses assessment of the extent by which the weakness from one approach can be compensated by the strengths from the other approach not only during the design stage but also when combining, weighting, and interpreting the findings" (p. 58). In this study standardized measures of psychological outcomes were used to obtain numerical results while participants' journals and in-depth interviews provided participants' subjective understanding and experience related to these outcomes and subtle nuances and contextual information about those variables. Triangulation, complementarity and development approaches were used to maximize the strength in both arms of the study and compensate the weakness of the other.

5.8.1.3 Sequential validity. Sequential validity refers to "the extent to which one has appropriately built on the prior stage in a sequential design" (Johnson & Chriasense, 2010, p.310). This study had a three-phase design in which each phase informed the next phase, and built towards constructing a final composite model. During the phase I, a substantive model was generated through conducting two separate qualitative studies. The findings from the first phase provided information pertaining to the meaning of resilience in chronic pain, potential therapeutic factors and mechanisms

of DMT as well as elements to be considered in designing a DMT intervention. Based on the findings from phase I, a 10-week group DMT intervention was designed and a set of quantitative outcomes and appropriate measurements were selected. The Phase II study served to test the initial model as well as identifying additional components to the model. By combining and integrating the models from phase I and II, a final composite model was constructed in phase III.

5.8.1.4 Multiple validities. Multiple validities refers to "the extent to which addressing legitimation of the quantitative and quantitative components of the study result from the use of quantitative, qualitative, and mixed validity types, yielding high quality meta-inferences." (Onwuegbuzie & Johnson, 2006, p. 57). This study attempted to utilize relevant research strategies so that the research could achieve multiple relevant validities. Legitimation for relevant quantitative and qualitative validities were addressed and achieved for each strands. Legitimation for the integration process was addressed and achieved to attain a strong meta-inference.

5.9 Discussion of the Integration of Quantitative and Qualitative Datasets

The study's overall research question was: "What theoretical model grounded in the quantitative (QUAN) and qualitative (QUAL) data can explain the therapeutic factors and mechanisms of dance/movement therapy in building resilience for people living with chronic pain?" Considering this research question, the purposes of using a mixed methods analysis were triangulation, complementarity, and development (Erzberger & Kelle, 2003).

The comparison of the QUAN and QUAL findings showed that there are several congruent findings between the two datasets. There was a congruency throughout all resilience variables (i.e., meaning-making, active coping, cognitive flexibility, self-efficacy, spirituality, acceptance, and growth) between QUAN and QUAL arms. Findings related to activity avoidance category of kinesiophobia and one of the variables from body awareness, *attention regulation* was also congruent. Variables related to immediate effect of DMT on pain, mood, stress, and relaxation as well as over time effect on pain intensity were all congruent. Relationship between body awareness and self-

efficacy was also congruent.

The quantitative results did not affirm DMT treatment benefits for one of the resilience variables, self-efficacy, most of the body awareness variables and the change over time in psychological outcomes, whereas the qualitative results provided support for these outcomes. However, it should be emphasized that the quantitative arm of the study provided empirical support for the effect of DMT on some of the main outcomes of the study, namely resilience and kinesiophobia as well as the decrease in pain intensity over time.

Furthermore, although the quantitative results did not affirm the correlational relationship between some of the variables derived from the phase I model, the qualitative findings from the second phase clearly supported several of these relationships. Moreover it should be emphasized that the qualitative arm of the study allowed inferring some new possible correlations between variables that had not emerged from phase I. For example, the relationship between meaning-making and acceptance did not prove to be statistically significant yet the qualitative data suggested that this relationship was present. The qualitative findings furthermore showed important relationships between acceptance and other variables such as 'self-efficacy – acceptance' and 'normality through peer recognition – acceptance'. With this observation, I suggest that future large-scale studies use structural equation modeling to explore the relationship between these variables.

While not displayed in the comparison table, the integration of qualitative and quantitative results provided complementary information regarding the video self-interpretation process. The quantitative findings demonstrated that people's self-perception of changes in movement while watching video-recordings of self from session 1 and session 10 were not significant. The qualitative data also indicated that watching the video clips of oneself engaging in the movement and performing narratives might have positive effects on individuals' body awareness, reappraisal of one's physical efficacy and self-esteem. This observation suggests that systemically examining the effect of video self-interpretation procedure not only as a method of outcome measurement but also as an intervention, might be meaningful in the future study.

CHAPTER 6: PHASE III. INTEGRATION – MODEL COMPLETION

6.1 Objective

The objective of this phase was to integrate the two models developed from phase I and phase II to construct a final composite model of DMT for resilience-building in people living with chronic pain.

6.2 Overview of Method

The findings from the substantive model developed during phase I were compared against the findings from the clinical model developed in phase II; then through a process of integration and refinement, a final composite model was constructed.

6.3 Developing the Final Composite Model

The theoretical model from phase I (i.e., the meta model generated based on the findings from a formative model developed from the literature and a reflexive grounded theory model developed from interviews) and the clinical model from phase II (i.e., a grounded theory model developed from qualitative and quantitative findings from a 10-week group DMT intervention) were compared side by side to inspect congruencies and divergence between the concepts depicted in each model. Although analysis of the data for phase II was done independently and two separate participant samples were recruited for each phase, the two models looked notably similar and the findings were consistent for the most part.

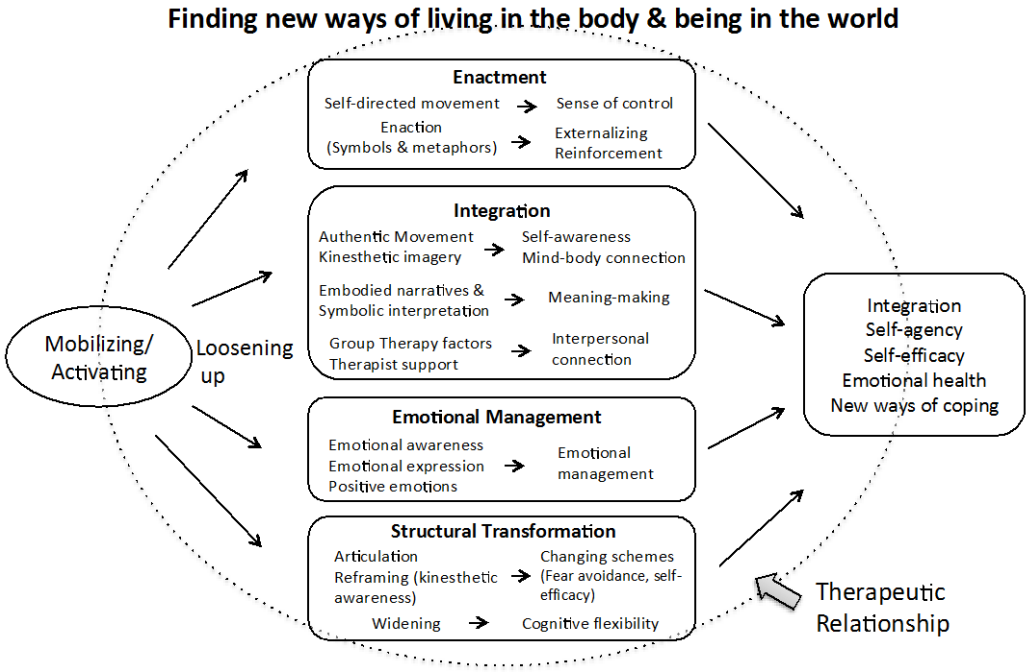


Figure 12. Substantive (Meta) model – Phase I

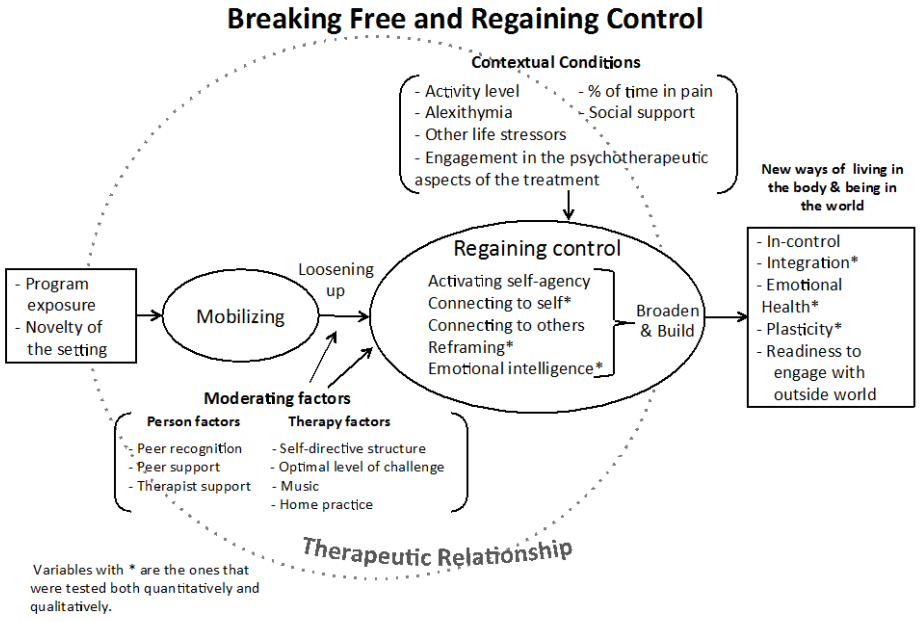


Figure 22. Clinical model – Phase II

The combining and integrating of the two models involved another meta-modeling process. Johnson (1998) used *a rule of parsimony* for the integration in his initial meta-modeling process. However, in this study, I applied a principle of pragmatism, that is constructing a model that provides the most useful information that "ultimately fits with the world" (Johnson, personal communication, February 26, 2015). The two models shared most of the core concepts yet the phase II model provided more information regarding the various conditions and contextual factors that affect key therapeutic processes as well as therapy outcomes. Therefore, the integration was done so that the formative model from Phase I was merged into the clinical model from phase II. Through the process of combining, integrating and refining, a final composite model was constructed. Table 38 provides a summary of the components in the model, along with reasoning based on empirical observations in this study and, when available, on empirical evidence from previous studies. This table contains all components, namely key mechanisms, moderator factors, contextual factors, therapeutic outcomes as well as the core category and theoretical code. For example, concepts such as 'control' (i.e., regaining control, in-control) or 'emotional health' (i.e., enhancing emotional intelligence, emotional health) are presented as a part of the mechanisms as well as outcomes. The model itself is provided on page x.

Table 36. Components in the composite model along with reasoning

Components in the model **Origin of rationales**	**Reasoning**	
	Theoretical model (Model I)	**Clinical model (Model II)**
Program exposure Complementary result from model II	Not identified	*Program exposure*
Novelty of the setting Complementary result from model II	Not identified	*Novelty of the setting*
Mobilizing/Loosening up Convergent result from both	*Mobilizing/Activating* as a primary process that facilitates *loosening up* in all levels	*Mobilizing* as a catalyst to *loosen up* in all levels to activate key therapy mechanisms

Table 36. - continued

Components in the model **Origin of rationales**	**Reasoning**	
	Theoretical model (Model I)	**Clinical model (Model II)**
Regaining Control Complementary result from model II	'*Sense of control'*	*Regaining control* (The main concept that summarizes the key mechanisms)
Activating self-agency Convergent result from both	S*ense of control* as a part of the '*Enactment'* process (A key mechanism)	*Activating self-agency* (A key mechanism)
Connecting to self Convergent result from both	*Intrapersonal connection* under the '*Integration*' process	*Connecting to self* (A key mechanism)
	Empirical evidence from previous studies: Christie, 2006; Gorham & Imus, 1999	
Connecting with others Convergent result from both but was emphasized in model II	*Interpersonal connection* under the '*Integration*' process (A key mechanism)	*Connecting with others* (A key mechanism)
	Empirical evidence from previous studies for *Interpersonal competency* as DMT's outcome Bräuninger, 2006; Dibbell-Hope, 2000; Hartshorn et al., 2002, Hokkanen et al., 2008; Jeong et al., 2005; Koch et al., 2013	
Reframing Convergent result from both	*Structural transformation* (A key mechanism)	*Reframing* (A key mechanism)
	Quantitative results showed statistically significant reduction in *Kinesiophobia (MD*= -2.789, *SE*= .975, *p*=. 031)	
Emotional intelligence Convergent result from both	*Emotional management* (A key mechanism)	*Emotional intelligence* (A key mechanism)
Broaden and build Complementary result from model II	Not identified	*Broaden and build* (The theoretical code)
In-control Convergent result from both	*Sense of agency* and *self-efficacy* (Therapy outcomes)	*In-control* (Therapy outcome)
	Quantitative result showed that there was a positive trend in *Self-efficacy* although not statistically significant *(MD*= .474, *SE*= .185, *p*=. 059) and the change of *Active coping* core was statistically significant between T2 and T3 *(MD*= .281, *SE*= .082, *p*=. 009)	
	Empirical evidence provided by previous studies for DMT's effect on *Self-efficacy and Self-effectiveness* Bräuninger, 2000; Bräuninger, 2006; (Yang, 2004)	

Table 36. - Continued

Integration Convergent result from both	*Integration* (Therapy outcomes)	*Integration* (Therapy outcome)
	Quantitative result showed the change of score in the following outcomes were statistically significant: • *Acceptance* between T1 & T3 *(MD*= .632, *SE*= .17, *p*=. 005) • *Meaning making and restoration* betweenT2 and T3 *(MD*= .380, *SE*= .09, *p*=. 002) • *Positive reinterpretation and growth (MD*= .539, *SE*= .142, *p*=. 004) • One of the subscales from body awareness, *Attention regulation* statistically significant *(MD*= .586, *SE*= .185, *p*=. 016)	
Emotional health Convergent result from both	*Emotional health* (Therapy outcomes)	*Emotional health* (Therapy outcome)
	Quantitative results showed that, there was a positive trend for *mood* over time although not statistically significant (*p* = .115). Statistically significant effects for pre-to-postsession change in *stress*, *mood* and *relaxation*: stress *(MD*= -2.186, *SE*= 2.80, *p*<. 0001*), mood (MD*= 2.131, *SE*= 244, *p*<. *0001*) and relaxation *(MD*= 2.496, *SE*= 2.623, *p*<. *0001*)	
	Empirical evidence from previous studies for DMT's effect on mood (*mood*, *anxiety* and *stress*) Akandere & Demir, 2011, Bojner Horwitz et al., 2006; Bräuninger, 2006, Bräuninger, 2012; Dibbell-Hope, 2000, Erwin-Grabner et al., 1999; Goodill, 2005; Haboush et al., 2006; Jeong et al., 2005; Koch et al., 2007	
Plasticity Convergent result from both	*Cognitive flexibility* (Key mechanism) and *New ways of coping* (Therapy outcome)	*Plasticity* (Therapy outcome)
	Quantitative result showed a statistically significant change in *Cognitive flexibility* between T2 and T3 *(MD*= .386, *SE*= .12, *p*=. 015)	
Readiness to connect to outside world Complementary result from model II	Not identified	Readiness to connect to outside world (Therapy outcome)
Peer recognition, peer support, therapist support as moderator person factors Convergent result from both	Not specifically identified as moderator factors but present as key therapeutic factors - *Group therapy factors*, and *therapist support* (Key mechanisms)	Factors emerged as *moderator person factors*
Self-directive structure, music, optimal level of challenge, home practice as moderator therapy factors Complementary result from model II	Not specifically identified as moderator factors but self-directive structure was present as a key therapeutic factor	Factors emerged as *moderator therapy factors*

Table 38. - continued

Therapeutic relationship Complementary result from model I	Therapeutic relationship (Emphasized as a critical element acting as a container/therapeutic environment)	Was present but as a part of moderator person factors
Activity level, alexithymia, other life stressors, % of time in pain, social support, and engagement with the therapeutic aspects of the treatment as Contextual conditions Complementary result from model II	Not identified	The factors emerged as the *Contextual conditions*
Breaking free and regaining control Complementary result from model II	The concept *breaking free* was partly included in the *loosening up* and *regaining control* was a part of key mechanism, gaining *sense of control*, but was not identified as the term describing the main process.	*Breaking free and regaining control* (Core category)

In summary, the purpose of the three-phase study procedure was to first generate a model, test the model, and to integrate and revise it to construct a final composite model. Most of the core concepts from phase I model survived the testing for its usability throughout the phase II. In addition, phase II provided further information that enriched the findings from phase I. Therefore constructing the final composite model was a process of merging the phase I model into phase II model, making small revisions and refining. The final composite model is presented below.

6.4 The Grounded Theory –A model of Dance/Movement Therapy for Resilience-building in People Living with Chronic Pain

Figure 24 displays the final composite model of dance/movement therapy for resilience building in people with chronic pain.

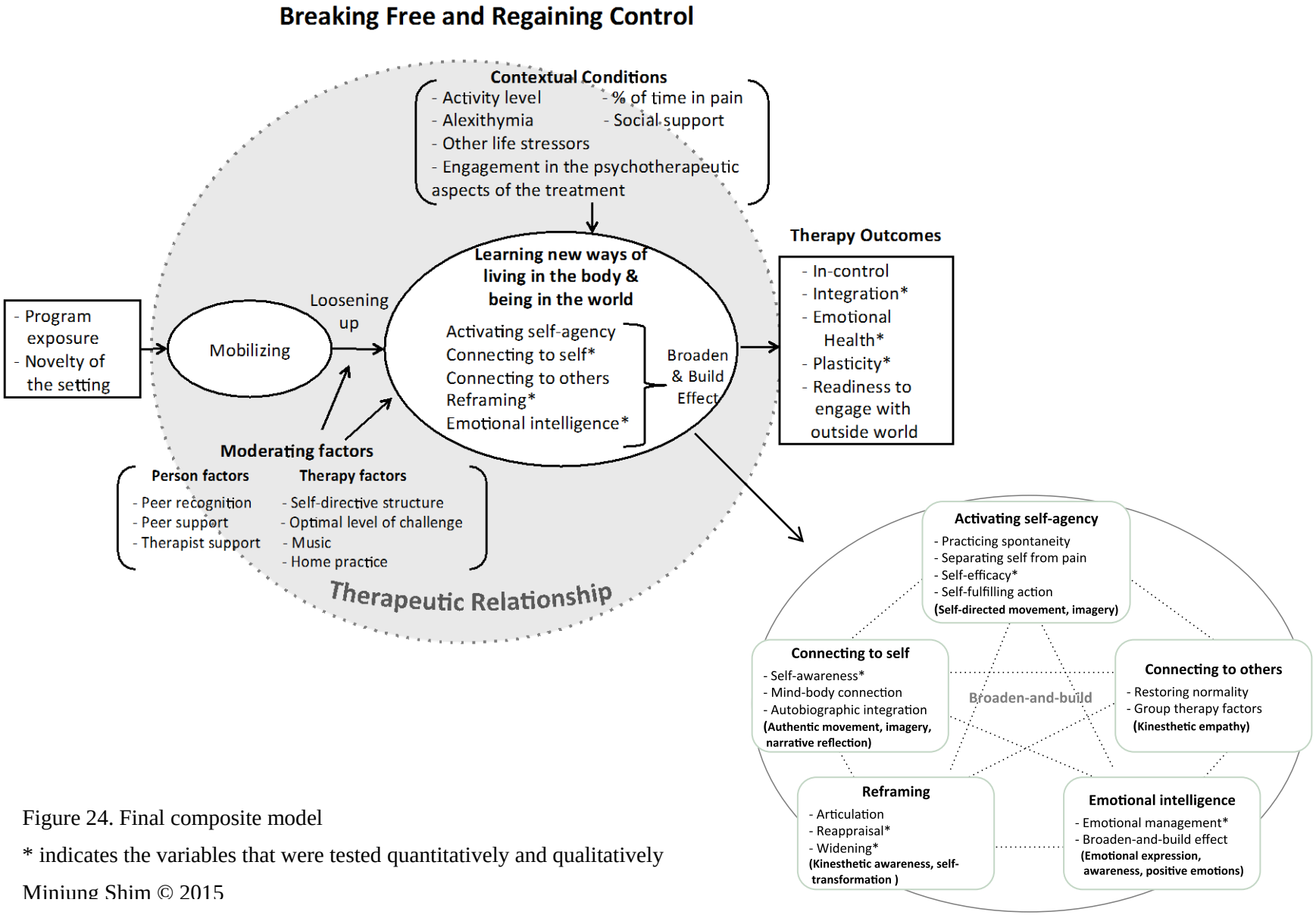


Figure 24. Final composite model

* indicates the variables that were tested quantitatively and qualitatively

The final composite model shows that the DMT process involves dynamic interactions between various factors that facilitate the intricate mechanisms of DMT to foster resilience resources for chronic pain management. The overall phenomenon is a process of *breaking free* from the rigidity and imprisoned state created by the overpowering impact of chronic pain toward *regaining control* over pain and one's life. DMT provides a novel environment for creative self-exploration and interactions, and mobilizes people to loosen up at all levels – physical, cognitive, emotional, and social. Key therapeutic mechanisms include *activating self-agency*, *connecting to self*, *connecting to others*, *enhancing emotional intelligence*, and *reframing*. Activating self-agency involves supporting individuals to practice spontaneity through self-directed movements and utilizing self-fulfilling actions to strengthen their internal locus on control. Connecting to self refers to the process of bringing holistic integration of one's mind and body such as integration of body parts, mind-body connection, meaning formation and autobiographical integration. Connecting with others has to do with actively utilizing various group psychotherapy factors to restore normality and experience social support. A unique mode of relating to others in DMT, *kinesthetic empathy*, a process/experience of recreating or understanding other person's ideas or feelings through movement reflection, is the key mechanism for this process. Reframing is a mechanism in which individuals change their cognitive framework pertaining to their perception or beliefs about self, body, physical activity and pain through processes like articulation, widening and reappraisal. Enhancing emotional intelligence refers to facilitating individuals' ability to be aware, express and manage their emotions. Another sub-category of enhancing emotional intelligence was broaden-and-build effect ,which refers to the mechanisms of DMT in enabling people to experience a range of positive emotions that facilitate them to build resilience resources and learn coping skills.

Several person factors (i.e., peer recognition, peer support and therapist's support) and therapy factors (i.e., self-directive structure, optimal level of challenge, music, and home practice) act as moderator factors in the process. Also an array of contextual conditions are identified namely activity level, alexithymia, % of time in pain, social support, other life stressors, and engagement in the psychotherapeutic aspect of the treatment.

As a result, participants in DMT may be able to achieve several therapeutic outcomes related to resilience in chronic pain such as feeling in-control, integration, better emotional health, increased plasticity, and readiness to engage with outside world.

6.5 Discussion of Developing the Final Composite Model

This study employed a mixed method grounded theory design in which exploratory and confirmatory intents, qualitative and quantitative data collection operations, and qualitative and statistical data analyses and inferences were combined (Johnson et al., 2010). In accordance with the exploratory and confirmatory purpose of this mixed methods grounded theory study, a composite model depicting the factors and mechanisms of dance/movement therapy for building resilience in people living with chronic pain is proposed.

A substantive theoretical model was developed during the first phase, which was exploratory in nature (i.e., starting with a broad concept and seeking a deeper understanding of the topic by looking at common themes to generate a substantive model from theory grounded in the data). In order to develop a substantive grounded theory, two sets of qualitative data collection and analysis procedures were conducted: a) building a formative DMT model of resilience based on existing literature; and b) conducting a reflexive grounded theory based on interviews with sixteen participants including people with chronic pain and dance/movement therapists who have worked with people with chronic pain. The model identified wide-ranging

factors, mechanisms and outcomes of DMT for resilience building in people living with chronic pain (i.e., Mobilizing, Loosening Up. Enactment, Integration, Emotional management, Structural transformation, Therapeutic relationship, Integration (outcome), Self-agency, Self-efficacy, Emotional health, and New ways of coping).

Informed by the substantive theory identified from the first phase, a 10-week group DMT intervention was designed and a set of quantitative outcomes and appropriate measures as well as qualitative study procedures were determined. The purpose of this clinical DMT intervention phase was to test the therapeutic factors and mechanisms of DMT for resilience building identified in the initial model from phase I quantitatively and qualitatively, hence serving as a confirmatory stage. The quantitative strand of the phase II confirmed DMT's efficacy on some of the outcomes identified in phase I (i.e., resilience, kinesiophobia, a part of body awareness outcomes, pain reduction, and immediate effect of mood, stress, relaxation and pain). However the findings from exploratory correlation analyses showed that most of the relationships between variables (i.e., kinesiophobia – self-efficacy, meaning making – acceptance, body awareness – kinesiophobia, positive reinterpretation and growth – acceptance) were not statistically significant except for the relationship between body awareness and self-efficacy. So this indicates that when people's body awareness increases their self-efficacy may increase too and vice versa. But the relationship for the rest of the pairs is not correlated.

The qualitative strand not only confirmed all of the variables from the phase I model but also provided more comprehensive information about the processes. It also identified some of the moderator factors and contextual conditions, thus fulfilled the purpose of using mixed methods analysis for this study, triangulation and complementarity (Greene, Caracelli, & Graham, 1989). The findings from the qualitative and quantitative strands were compared and integrated, and grounded on the results from both strands, a clinical model was constructed. The model depicts

causal conditions (i.e., program exposure and novelty of the setting), some key factors and mechanisms (i.e., mobilizing, loosening up, activating self-agency, connecting to self, connecting with others, reframing, and emotional intelligence), moderator factors (i.e., person factors – peer recognition and therapist support, and therapy factors – self-directive structure, optimal level of challenge, and music), a list of contextual conditions (i.e., activity levels, alexithymia, other life stressors, social support, % of time in pain, and engagement with the therapeutic aspects of the treatment), and some therapy of outcomes (i.e., in-control, integration, emotional health, plasticity, and readiness to engage with outside world).

Combining and comparing the two models developed from the two phases showed that all of the key therapeutic factors, mechanisms and outcomes identified from the substantive model survived the testing indeed; moreover the phase II model provided more comprehensive information about the phenomenon. There was a great degree of congruency between the two models with little divergence.

Table 37. Comparison of the models from phase I and II

<table>
<tr><th>Congruent</th><th>Divergent</th></tr>
<tr><td>
1) Role of ‘mobilizing/loosening up’ was recognized as a driving force or catalyst for the key therapeutic processes to take place in both models.

2) Key therapeutic mechanisms
<table>
<tr><th>Phase I</th><th>Phase II</th></tr>
<tr><td>Enactment</td><td>Activating self agency (‘Enactment’ as a component of this process)</td></tr>
<tr><td>Integration (Intrapersonal connection and interpersonal connection combined within the category</td><td>Connecting to self
Connecting with others as separate categories</td></tr>
<tr><td>Emotional management</td><td>Improving emotional intelligence</td></tr>
<tr><td>Structural transformation</td><td>Reframing (The term ‘reframing’ as a comprehensive concept referring to cognitive restructuring)</td></tr>
</table>
3) Therapy outcomes
<table>
<tr><th>Phase I</th><th>Phase II</th></tr>
<tr><td>Self-agency
Self-efficacy</td><td>In-control
(Self-agency + self-efficacy)</td></tr>
<tr><td>Integration</td><td>Integration</td></tr>
<tr><td>Emotional health</td><td>Emotional health</td></tr>
<tr><td>New ways of coping</td><td>Plasticity</td></tr>
</table>
</td><td>
1) The core category, (main phenomenon) in Phase I was ‘Creating new ways of living in the body and being in the world’ while it was ‘Breaking free and regaining control’ in the Phase II model.

2) Phase I model emphasizes the ‘therapeutic relationship’ as a container or therapeutic environment while in phase II model it was identified as an aspect of ‘connecting with others’ and therapist’s support as one of the moderator factors.

3) Phase II model provides more detail information about the conditions - causal, moderator, and contextual) that affect the therapeutic processes.

4) In Phase II model, peer and group therapy factors emerged more strongly, thus identified as a separate category.

5) In the phase II model resilience as an outcome was apparent and ‘readiness to connect to outside world’ also emerged as an outcome.
</td></tr>
</table>

Grounded on the results from the second phase, the substantive model was reviewed and refined. Since the clinical model provided further knowledge that helped contextualize the findings from the substantive model, the integration process engendered a final composite model that is more complex than the substantive model. Reflecting the purpose and function of each of

the three phases, the overall sequential exploratory-confirmatory mixed methods grounded theory study was completed.

6.6 Credibility and Quality of the Overall Grounded Theory Process

Corbin and Strauss (2008) used the term "credibility" in discussing the validity, trustworthiness or believability of the research. Even though their discussion was focused on grounded theory as a qualitative approach, I believe that the concepts they propose are relevant to mixed methods grounded theory as well. In discussing the issue of credibility and quality of a research, they contended that a research study should be both scientific and creative/artistic, and the findings should reflect both these aspects. Corbin and Strauss quoted Whittemore, Chase, and Mandle (2001), "Elegant and innovative thinking can be balanced with reasonable claims, presentation of evidence, and the critical application of methods" (p. 527). In this research, much effort and considerations were made to represent these features in every stage of the process and presentation of the findings.

I agree with Corbin and Strauss's idea, "each method deserves its own set of judgment criteria". I found the criteria suggested by Charmaz well represent the scientific and creative aspects of research and are applicable in evaluating the credibility of this research. According to Charmaz (2006) four categories namely credibility, originality, resonance and usefulness should be considered in evaluating grounded theory. I will use sample questions proposed by Charmaz's to discuss the credibility of this study in respect to each criterion.

6.6.1 "Do the categories cover a wide range of empirical observations? Are there strong logical links between the gathered data and your argument and analysis?" – Credibility of a study. This study attempted to investigate the phenomenon by using every possible way of observation to discover the theory. For example, a formative model was developed based on the literature; a reflexive grounded theory from phase I was developed from interviews; and a clinical

theory/model was developed based on the clinical invention while collecting and analyzing the data both quantitatively and qualitatively. Both verbal data (interview scripts) and non-verbal data (video recordings of session) were utilized. All discussion and analyses were made based on the findings through a systematic process and there was transparency in displaying this process and rationales. When an argument was made, critical questions were asked to identify the logical linkage/relationship between the concepts.

6.6.2 "Are your categories fresh? Do they offer new insights?"- Originality of a study. This study generated codes, categories, core category and theoretical code that were based on different sources of data. They provided new information and insight related to the therapeutic factors, mechanisms, outcomes and contextual conditions of the therapeutic process of DMT for resilience building in people with chronic pain.

6.6.3 "Do the categories portray the fullness of the studied experience?"- Resonance of the study. This study provided sufficient detail and description of the concepts discovered. It also demonstrated sufficient evidence on the process of data collection and analyses so that readers can see how I came to the findings and conclusion and judge for themselves.

6.6.4 "Does your analysis offer interpretations that people can use in their everyday worlds?"- Usefulness of the study. I believe that the findings from this study are understandable to lay people as well as professionals and the theory has the potential for application to a wide variety of situations and chronic pain population, although further research is certainly needed to refine and test the model. Theoretical, clinical, and methodological implications and suggestions are presented in the final discussion section.

Another approach is taken to examine the quality of the research. Strauss and Corbin (1998) suggested eight general conceptual questions to ask to assess the quality of a grounded theory. Each question and how this study addressed the question are displayed in Table 38.

Table 38. Grounded theory credibility questions

Questions	Trustworthiness of the GT
1. Are concepts generated?	Yes. The concepts were generated through systematic analyses of various data sources.
2. Are the concepts systematically related?	Yes. Questions like “why”/“how come” and “when” were asked to identify the relationship between the concepts; the linkages are presented as a form of hypotheses or woven throughout the text in more subtle forms.
3. Are there many conceptual linkages, and are the categories well developed? Do categories have conceptual density?	Yes. The concepts and categories were systematically developed and connected as codes, categories, core category and theoretical code etc.; the linkages of these concepts formed a theoretical explanation of the process of resilience building. Each category has richness of the description of a concept.
4. Is variation within the phenomena built into the theory (how differences are explored, described, and incorporated into the theory)?	Yes. A secondary analysis was done to examine exceptional cases and the related conditions for those cases. These conditions are displayed in the model.
5. Are the conditions under which variation can be found built into the study and explained?	Yes. Concepts were examined under a set of different conditions and developed across a range of dimensions through the secondary analysis. The identified contextual conditions are incorporated into the model and explained in the grounded theory.
6. Has process been taken into account?	Yes. The research process is explained so that the readers can see the actions taken according to the emergent theory.
7. Do the theoretical findings seem significant, and to what extent?	Yes. The study successfully identified and delivered new information and offered new insights and explanations about the phenomenon. Based on the findings, theoretical, clinical, and methodological implications were made.
8. Does the theory stand the test of time and become part of the discussions and ideas exchanged among relevant social and professional groups?	Partially yes. The variables identified in the initial model developed from the phase I survived through the testing phase and connected to the existing literature. Further exploration and testing of the theory and refinement of the model is needed in the future.

CHAPTER 7: IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

7.1 Implications

7.1.1 Theoretical Implications and Recommendations

7.1.1.2 Dance/Movement Therapy. The compatibility of DMT goals with contemporary pain theories and the potential efficacy of DMT for chronic pain management have been addressed in the literature (Bullington, 2009; Christie, 2006; Goodill, 2005; Gorham & Imus, 1999). A limited body of research on DMT for chronic pain has reported positive effects of DMT on several outcomes related to chronic pain management (i.e., pain intensity, body image, stress, mood, sense of integration and subjective meaning of pain). Previous studies have also provided implicit concepts related to the therapeutic process of DMT for chronic pain (Bojner Horwitz, 2004; Bullington et al., 2003; Christie, 2006; Sjöström-Flanagan, 2004). However, no studies have systematically examined the therapeutic factors and mechanisms of DMT for chronic pain management nor presented a theoretical model. Moreover, despite the fact that DMT is a strength-based modality that incorporates a positive psychology perspective on health and illness (Goodill, 2005), no published DMT study has systemically investigated DMT's effect on psychological resilience to my knowledge. Psychological resilience is one of the most critical concepts to be studied in relation to individuals' sustainability in the context of stress and adversity (Zautra et al., 2010). This study employed a robust research methodology to investigate the therapeutic process of DMT in people with chronic pain and provided a comprehensive theoretical model that depicts therapeutic factors and mechanisms of DMT for building resilience in people living with chronic pain.

The findings from this study indicate that several key concepts of DMT for chronic pain management previously identified by researchers (i.e., integration, loosening, meaning-making,

self-awareness, creativity, structural transformation) are indeed central to the therapeutic process. The final model developed through this study, however, took previous implicit models from existing literature to the next level and provided a fuller and more specified understanding of the therapeutic mechanisms of DMT for building resilience in people with chronic pain. The model describes the core process of resilience building as a process of loosening up and breaking free from what feels like an imprisoned state, in which one's lifeworld is overcome by pain, toward regaining control and achieving an array of outcomes related to resilience resources. It is important to note that experiencing internal locus of control over pain and one's life and achieving a sense of integration are key concepts of the therapeutic process and outcomes in people with chronic pain. This indicates that psychosocial treatment for people with chronic pain must address individuals' fundamental self-concepts related to self-agency such as self-esteem/self-worth, self-knowledge, and self-efficacy.

The core therapeutic mechanisms include *activating self-agency, connecting to self, connecting others, reframing* and *enhancing emotional intelligence*. Each mechanism is comprised of unique therapeutic factors or theoretical principles of DMT (i.e., self-directed movement and self-fulfilling action for activating self-agency, mind-body integration and meaning-making for connecting to self, kinesthetic empathy and therapeutic relationship for connecting to others, systems theory principles for reframing, emotional awareness, expression and processing for enhancing emotional intelligence). *Broaden-and-build* was identified as a guiding principle in the process of breaking free and regaining control. As discussed in page 172, broaden-and-build theory emphasizes the effect of positive emotions on individuals' ability to build resources and coping strategies that are useful for survival and sustainability (Frederickson, 2001). The findings indicate the potential role of DMT in creating a wide range of positive

emotions and creative state. These, in turn, can enable individuals to explore, learn, and practice invaluable coping skills and develop resilience resources specific to chronic pain management.

In addition, the current study identified a set of contextual conditions that may affect the magnitude of DMT's therapeutic effect on particular outcomes for individuals with chronic pain. The secondary analysis of the qualitative findings from the phase II study helped to identify the following contextual conditions: 1) individuals' activity level, 2) % of time in pain, 3) alexithymic tendency, 4) level of social support, 5) other life stressors, and 6) ability to engage with the therapeutic aspects of the DMT treatment. It appeared that these conditions might be related to a person's experience in 1) acceptance of pain, 2) ability to use imagery and separate self from pain, 3) ability to utilize self-fulfilling action, 4) ability to articulate, and 5) tendency to connect to other people outside of the group. Therefore, future studies should continue to examine the relationship between the identified contextual conditions and the above mentioned characteristics. Additional exploration of the relationships between these factors may provide valuable information regarding strategies to optimize DMT interventions for specific subgroups of people with chronic pain.

Another implication is derived from the complexity of the therapeutic mechanisms of DMT for resilience building in people with chronic pain. Although the quantitative measurements used in this study captured positive trends in DMT treatment benefits for some outcomes as well as correlations between some of the variables, they did not suffice to capture the complex nature of therapeutic mechanisms of DMT which were suggested by the emergent, grounded theory in the qualitative arm. An advanced quantitative analytic technique such as mediation analysis might be useful in strengthening the model by confirming the pathways between some of the variables. However, statistical models for mediation analyses typically require a very large sample size.

This may not be feasible for dance/movement therapists without significant funding and typically this is feasible only with substantial research funding.

7.1.1.2 Resilience theory/model. The findings from this study suggest that existing resilience models applicable to chronic pain could benefit from the inclusion of the embodiment aspect of people's experience of pain and resilience building process. The findings showed that DMT offers unique therapeutic factors that can help people to counter the impact of chronic pain on individual's embodiment. DMT also enables these individuals to activate an embodied mode of fostering critical resilience resources related to chronic pain management.

Yeung & Zautra's resilience model (2012) conceptualizes chronic pain as a disruption in all aspects of an individual and identifies multidimensional resilience resources (i.e., approach coping, emotional complexity, benefit finding, social intelligence and strong social ties with the people). The resilience in illness model proposed by Haase and colleagues (Haase et al., 2014) also identified resilience protective factors that address psychosocial aspects of chronic pain adaptation (i.e., positive coping, spirituality, hope, purpose in life, optimism). The model from the current study provides an example of how these valuable psychological constructs identified in the existing models could be embedded in a physical reality of people living with chronic pain. Almost all participants from the phase II of this study agreed that acting out one's aspirational thoughts, emotions or therapeutic goals in movement has a reinforcing or actualizing/activating effects, meaning that the acting out is more effective than just envisioning or verbalizing them alone. In DMT, people actively rehearse and practice behavioral changes and revise their dysfunctional patterns (Sandel, 1993, as cited by Goodill, 2005). Thus embedding the physicality in the process of cultivating resilience resources or protective factors may strengthen individual's resilience-building process. The proposed model in this study identifies some of the unique mechanisms of DMT through which people can experience embodied ways of fostering critical

resilience resources/protective factors such as: 1) activating self-agency by engaging in self-directed movement exploration and performing self-fulfilling action; 2) developing social intelligence through kinesthetic empathy; 3) benefit/strength finding through recognizing personal efficacy for physical activity, and 4) gaining insight through symbolic expression and interpretation or movement-based narratives.

At the core of the construct of resilience are malleable and dynamic qualities such as flexibility for adaptation, ability to recover/bounce back, or plasticity for transformation. Thus, in order to withstand the adverse effects of chronic pain, it is important to be able to conceptualize strength not as a static or rigid state but a dynamic state of flexibility and mobility. The final model of this study proposes that the process of 'breaking free and regaining control' implies a transition from a stagnant, rigid, and imprisoned state of being to a freer, adaptable and dynamic state. Therefore, the picture of a resilient individual portrayed in this model is a person who has the dynamic adaptability and readiness to actively react/respond to stressors related to the chronic pain experience. In their discussion of DMT as an embodied and enactive form of psychotherapy, Koch and Fuchs (2011) emphasized the efficacy of DMT in supporting individuals' ability to adapt within self and toward the environment moment-to-moment basis. They stated, "Body motion and sensorimotor experience play a significant role in the formation of concepts and abstract thinking" (p.57). Therefore, the embodied and enactive mode of resilience building identified in the model of this study might provide a unique perspective in the existing resilience theories in chronic pain and illness.

7.1.2 Clinical Implications and Recommendations

The findings from this study provided some practical knowledge that may be applied in DMT clinical practice. During the reflexive grounded theory interviews, I asked participants what would be the most important things to consider in designing and applying DMT

interventions for people with chronic pain. Amongst several factors recognized, *respecting personal limitation* was emphasized by the majority of participants as critical. This was confirmed in the findings from phase II . When asked what aspect of the treatment was most important or effective, the majority of the participants recognized that having a self-directed, non-prescribed structure in which they could participate in the activity at free will was very important. They described that this allowed them to practice spontaneity and internal locus of control in terms of monitoring their own pain level or mobility. It furthermore allowed them to make judgments about their personal capacity and limitations in-the-moment while engaging in the movement exercises. It appeared that practicing spontaneity further encouraged them to actively participate in the group process and even challenged them to push their physical limits. This often led them to discover that they actually could do more than they had thought which gave them confidence, a sense of accomplishment and motivation to exercise more. As discussed in page 145 it is important to note that providing an environment in which one can foster self-motivation for physical activity might be particularly critical for people with chronic pain due to social stigma and validation issues associated with one's ability and/or willingness to engage in physical activities (i.e., people with chronic pain are often viewed as having a weak mind or being lazy even when they trying their best). One participant stated that experiencing acceptance and validation about one's pain and physical capacity itself could bring an enormous sense of healing for people who have been struggling with invalidation issue created by the invisibility of pain. Therefore, in DMT practice for people with chronic pain, the therapist should 1) provide non-judgmental and non-forceful therapeutic support; 2) focus on improving individuals' body awareness so that they can develop and practice an accurate appraisal of their own physical capacity and limitation; 3) offer optimal level of challenges during movement exercises so that

the person can experience a sense of accomplishment and mastery; and 4) provide an embodied mode of validation and acceptance through kinesthetic empathy.

Another clinical implication is based on the participants' mentioning of underlying psychological issues related to their chronic pain experience that came up during the therapy sessions.

Several participants spoke about personal psychological issues being evoked during the therapy session to their surprise. This issue was mentioned during the phase I interview by one participant who is a dance/movement therapist. While speaking about her experience of working with her clients with chronic pain, she underscored her observation of the association between individuals' psychological issues or history of trauma and chronic pain. They included problems with attachment, self-esteem and primary belief system about one's capacity to manage challenging life situation, or physical/sexual trauma. This was observed by Bojner-Horwitz and colleagues (2003) as well (i.e., significant number of participants reporting history of trauma). DMT practice is based on the premise of mind-body interrelation; thus somatic symptoms are viewed and dealt with in the light of their possible relationship to any disturbance that might be present in other domains of the system. In addition, during the treatment process, people often experience that issues which had been repressed in their unconscious are being uncovered. Thus one may encounter specific memories, thoughts and feelings that they had not been aware of while engaging in the movement exploration. Based on these understandings, two things should be addressed regarding this issue. First, a comprehensive treatment of individuals with chronic pain should include addressing any underlying psychological issues that might be associated with the person's experience of pain as a whole. The therapist should be aware of the possibility of the presence of associated trauma or psychological issues and be ready to provide safety and therapeutic support for the client to process these issues as they come up. Second, due to the issue

of social invalidation of pain and patients' experience of resentment and frustration toward other people's "It's all in your head"-type comments, (Morley, 2008), extra sensitivity and care is required of the dance/movement therapist when addressing psychosomatic aspects of a person's chronic pain experience. Therefore, it is important to validate that their pain is real and let them understand that the need for psychotherapy is not because the clinician suspects a psychological origin of the pain only but s/he is seeking to equip them with the tools to address multifaceted impact of chronic pain and improve the quality of life.

A couple of DMT techniques that appeared to specifically work well in this study should be discussed. The top three techniques mentioned by the participants as the most helpful/effective were the use of imagery, movement-based narrative, and mirroring. Imagery is one of the most widely used techniques of non-pharmacologic pain management strategy (Burhenn, Loausson, Villegas, & Kravits, 2014). In the current study, imagery was used not only as a mental visualization but was coupled with meaningful action. Imagery appeared to be a part of several key therapeutic processes such as separating one's self from pain by externalizing or objectifying the pain, facilitating mind-body integration through making movement a meaningful action, supporting meaning-making process by interpreting the contents of the imagery, and activating self-agency through performing a self-fulfilling action. Advocating the use of imagery for pain management, Bresler (2014) said,

> People can derive not only symptomatic relief, but actual physiologic healing in response to treatments that primarily work through beliefs and attitudes about an imagined reality, then learning how to better mobilize and amplify this phenomenon in a purposeful, conscious way becomes an important, if not critical, area of investigation for modern medicine. (p.4)

The findings from this study provide qualitative support that DMT might be a modality that can answer this call.

Applying narrative components of self-reflection in relation to the experience of pain was suggested as a potentially effective therapeutic exercise by some participants during the first phase grounded theory interviews. Based on this understanding, movement-based narratives were incorporated into the treatment contents of the DMT intervention. The findings from the second phase suggested that this technique is indeed an effective mode of therapeutic intervention for people with chronic pain. Participants generally accredited creating and performing movement-based narratives as one of the most powerful experiences through which they gained insight and found a sense of hope. The qualitative data suggested that movement-based narrative was linked to a variety of therapeutic outcomes such as autobiographic integration and identity reflection, temporal articulation, recognizing strength and improvement, meaning-making, instilling hope, and ability to project self in the future. The impact chronic pain has on an individual is described as 'unmaking of one's lifeworld' (Scarry, 1985), chaotic disintegration (Bullington, 2003), detachment from self (Jackson, 1994), and disarticulation of fields (Bullington, 2009); the therapeutic effect of creating and sharing a personal account of the experience of illness and healing has been emphasized as one way to counter these destructive effects (Good, 1992). The findings from this study suggest that DMT offers a unique and powerful mechanism that maximizes the benefits of narrative as a discourse of healing and empowerment. Thus incorporating narrative reflection in various forms in the course of treatment is recommended.

The findings showed that embodied mode of self-expression, communication and empathizing with others could be a distinct way to experience acceptance, validation, and healing for people with chronic pain. Although mirroring is a key technique used in any DMT practice, it appears to be a particularly important treatment strategy for this population. All participants spoke about the frustrating experience of pain as an invisible/unsharable disability and strength intense need and desire to be understood and validated by others. DMT activities based on the

principle of kinesthetic empathy gave them an opportunity to experience a genuine kind of identification and validation at a bodily level, which, in turn, brought a strong sense of healing. Therefore, ‘pain as a shared experience’ should be sufficiently experienced by people during treatment. An important role of the dance/movement therapist is to provide various forms of kinesthetic empathy to acknowledge, identify and reflect the client’s experience of pain. In addition, as the therapist mirror clients’ experiences, s/he should help them, if necessary, to change their current perception of pain by guiding them to differentiate and articulate different aspects of pain (e.g., what does it look like when the pain is at its worst vs. pain at its best) and transform the meaning of pain so that it can be accepted and integrated to the person in a healthy way.

Another suggestion for clinical practice is based on the impact of a structured movement sequence that participants can learn and, Subsequently, practice by themselves (i.e., the ‘connection dance’ which was taught in the beginning of the study as well as shared via YouTube link). Even though the emphasis of the treatment was on facilitating self-initiatives and creativity through free-form/improvisational movements, the ‘connection dance’ was employed in order for participants to experience a sense of mastery and learn a tool use outside of the DMT session. Other practical techniques such as breathing and stretching as well as practical application of Effort theory (Bartenieff, 2002) (i.e., relationship between different movement qualities and coping patterns) were also taught. Many participants reported that they practiced these techniques and connection dance at home and incorporated them into their pain management routine. It appears that having these self-help tools gave them a sense of empowerment and control over their pain-related symptoms. Since motivation and self-efficacy for self-management is a critical attribute in chronic pain rehabilitation, including this type of educational component to a treatment plan might be useful. Furthermore, an important part of psychological intervention for

chronic pain is transforming people's cognitive framework regarding their beliefs and coping behaviors; thus incorporating cognitive-behavioral aspects into DMT practice might helpful.

A final clinical implication based on the study findings is the use of video-recall procedures (VRP) for examining participants' subjective understanding through observational data. In this study, VRP was used as a method of self-evaluation and data collection. However, it appeared that the experience of watching oneself in the video might have acted as a therapeutic procedure in and of itself. After watching video fragments of their movement narratives, participants stated that it had helped them to have a better awareness about their body and movement. The majority of participants also expressed satisfaction and positive evaluation of one's capacity for physical activity. This experience seemed to help them to have a new perspective about self, self-esteem, and self-efficacy. When a person is in pain, pain is experienced internally; thus the subjective perception of self is profoundly affected by the noxious sensation, which, in turn, may make the individual perceive/evaluate the self negatively. VRP of self might give them an opportunity to look at one's self with an objective point of view through which one can see a capable aspect of self or an overall image of self rather than pain. This then may positively transform their self-perception. Bojner-Horwitz's study (2003) also provided empirical evidence for the beneficial effects of VRP. Although the extent of its clinical effect and mechanism needs additional research, the findings from the current study and Bojner-Horwitz's study imply that clinical application of VRP should be considered.

7.1.3 Methodological Implications and Recommendations

Although this study was not the first to use a mixed methods grounded theory design, this study employed different methodological techniques in a way that had not been done previously (i.e., a sequential exploratory- confirmatory mixed methods grounded theory). In particular, the analysis method was aimed at developing a substantive model based on two separate sets of data

collection and analysis methods (i.e., meta-modeling and reflexive grounded theory). It proved to be a fruitful analysis method that led to an exploratory theoretical model which described complicated data. Most of the elements of this substantive model survived the testing through the consecutive clinical study. Throughout the clinical intervention period, a convergent parallel mixed methods research procedure was carried out to test the substantive model quantitatively and qualitatively. The clinical phase not only served the purpose of testing the substantive model but also provided complementary findings that further elaborated the mechanisms identified in the substantive model and added additional dimensions and contextualization to the initial model. The three-phase sequential design employed in this study allowed each phase to inform the next phase and build towards constructing a final composite model that depicts the intricate theoretical mechanisms of DMT for resilience building in people with chronic pain. This mixed methods grounded theory study was effective in uncovering implicit therapeutic mechanisms of DMT for resilience building in people with chronic pain and present a refined theoretical model that describes the complicated data.

A notable finding from the quantitative analysis was an interesting pattern of change in people's scores on some of the outcome variables. The statistical results showed that the score of most of the resilience and body awareness subscales dropped at week 5 (T2) compared to baseline (T1), and then increased by the week 10 measurement point (T3). Thus, most of the statistically significant changes observed in these variables were between T2 and T3 rather than between T1 and T3. There are two possible hypotheses for this phenomenon. First, there is a possibility of self-report bias in which people tend to over-report behaviors viewed as appropriate or socially desirable (Donaldson & Grant-Vallone, 2002). Participants might have over-reported their resilience and body awareness during the baseline measurement session to make a good impression. Then, as sessions progressed, people might have felt safe enough to be open and be

authentic in their self-expression. So by the 5th week the participants self-reporting could have become more of a true reflection of their current condition, thereby displaying the decreasing trend in the scores. A second hypothesis is that the decrease in scores was actually related to another positive effect of the treatment, namely increase in self-awareness and insight. For example, the statistic results showed that the average baseline score for resilience was quite high (high enough to raise a concern for a potential ceiling effect). This might be related to a lack of insight about one's actual level of resilience rather than a reporting bias. The DMT experience might have positively influenced participants' level of self-awareness and appraisal, which may have resulted in more accurate reporting about these outcomes at T2. These assumptions may correspond with the understanding of DMT as a modality that involves *systematic therapeutic learning* which suggests that the effectiveness of treatment can be mediated by the amount of exposure to the treatment (Cassileth et al. 1999, as cited by Goodill, 2005). This emerged in the qualitative data as well. Some participants expressed that longer treatment period with a greater dose might increase the magnitude of therapeutic effects of the treatment. This might be particularly relevant for people who have been living with chronic pain for an extensive period of time. Therefore when investigating the effect of DMT intervention for people with chronic pain, researchers should ensure to provide sufficient "dose" of treatment.

Secondary analysis of the qualitative data from phase II served to provide additional information regarding certain contextual conditions that might be associated with some of the main findings. It showed that participants' characteristics (i.e., demographics, activity level, pain related characteristics, alexithymia etc.) also emerged as factors that could play a moderating role in DMT process and thus, in the effects of DMT on the ability to separate self from pain, use imagery, the experience of acceptance, self-efficacy, interpersonal coping behaviors and so on. Because the model suggested that these factors might affect individuals' experience of the

therapeutic mechanisms and outcomes, they should be noted by researchers undertaking studies of effects of the DMT experience on resilience building process. Moreover using secondary analysis of qualitative data is recommended to strengthen the model construction process.

7.2 Limitations

Overall, this doctoral research provided a successful example of how a mixed methods grounded theory design can generate and test a theoretical model that describes complex data. However, inevitably there are several limitations that should be addressed.

One of the limitations identified about the DMT intervention was the short treatment period (i.e., 10-week), thus the 'dose' of the treatment might have been insufficient to create quantitatively observable changes in some of the outcomes measured. Another limitation was the small number of people in one of the four treatment groups. The group at Rowan NMI initially had five people enrolled, but one person had to drop after consenting due to sudden illness. Another participant had to discontinue participation after three sessions due to conflict with her new class schedule. Consequently the group had only three participants, which was smaller than the rest of the study groups (5 or 6 people per group). Furthermore one of the three participants had frequent absence due to a family emergency; therefore sessions were often held with two people only. Considering the fact that the dynamic group therapy factors were reported by the participants a significant part of the therapeutic process, the experience of group therapy factors by the participants of these groups might be different from the members of the bigger group. It is possible that smaller group size could have provided positive effects for people such as safety related to self-disclosure or more intimacy and closeness to the members. However it is also possible that these individuals might not have experienced relational dynamics that can happen in a bigger group. As individual and group DMT clearly have distinct advantages and treatment

goals, future studies also should examine the efficacy of DMT treatment for individuals with chronic pain as well.

Given the small sample size, and thus lack of statistical power, the reader should use caution when interpreting the quantitative findings of this study. The findings provide useful information about the trends of DMT treatment effect on the outcomes included in this study. The findings from this pre-experimental design testing of a theoretical model do not offer support of treatment efficacy. Additional randomized controlled trials will be needed to establish efficacy and, subsequently, treatment effectiveness.

The difficulty to comprehend the language in the questionnaires was another factor that needs to be acknowledged. Some participants reported that several questions from the measurements were challenging to understand and asked me to give further explanation for those questions. Examples of those questions were,

- I do not notice (I ignore) physical tension or discomfort until they become more severe. (MAIA)
- I listen for information from my body about my emotional state. (MAIA)
- Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening. (TSK-11)

Although participants' functional literacy (i.e., ability to read and understand the texts in the questionnaire) (Protheroe, Nutbeam, & Rowlands, 2009) could be related to this issue, the wording of the questionnaires itself might have been confusing for some people to understand. A confusion regarding the instrument was also found in the VAS that was used to measure psychological outcomes.

The scale was presented in a way that the mark on the right side of the scale represents greater level of the variable (i.e., the far right hand of the scale represent greater mood, greater stress, and greater relaxation). Although additional visual markers (picture of facial expression

matching the text description) were used to avoid confusion, I found that measuring mood state with opposite qualities in a single VAS scale can be confusing to people. One participant described after five sessions that she realized she had been scoring her stress score in reverse due to misinterpreting the scale. Extra consideration and thorough explanation of the scale should be made when designing and utilizing VAS; confirming whether participants have correctly understood the concept is also necessary.

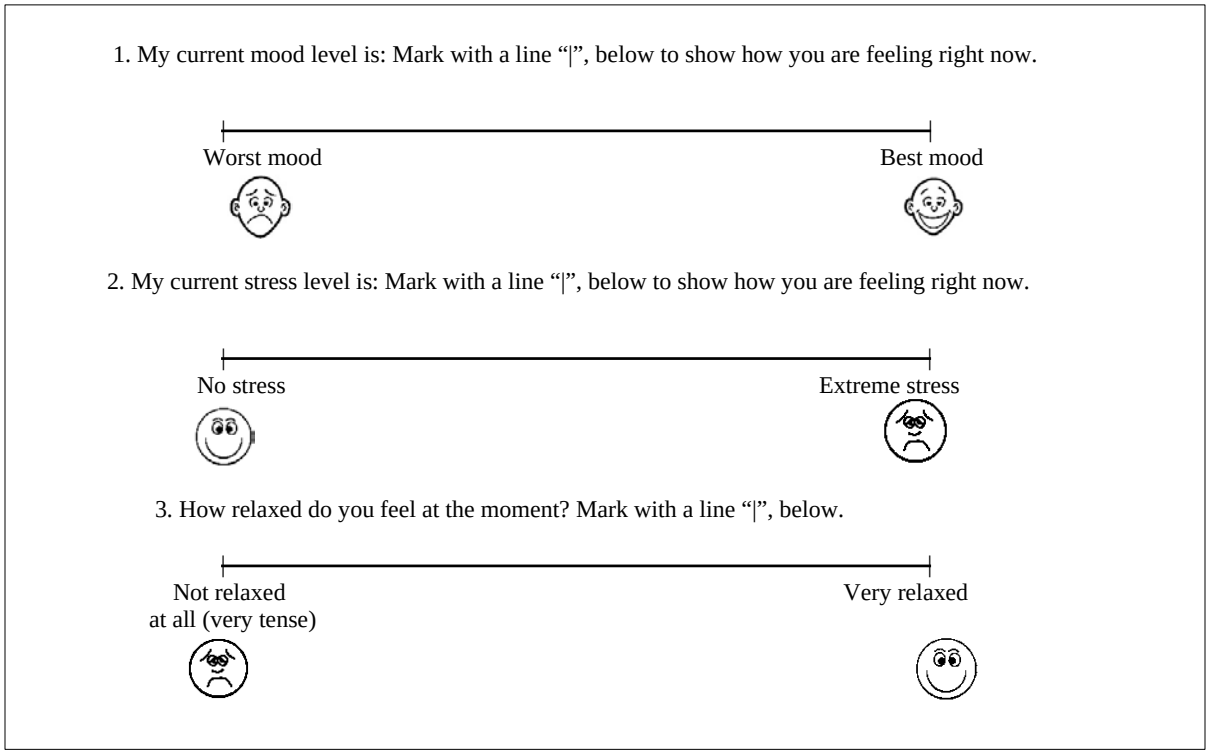


Figure 25. VAS for psychological measurement

Limitation related to convenience sampling is another issue that needs to be addressed. First, uneven gender distribution within the study sample may limit the transferability of the findings across genders. About 80% of the participants for the whole study were female. During the participant recruitment some healthcare providers who advertised this study to their patients

reported that male patients tended to express reluctance when they heard that the study involves dance and movement. This is a common phenomenon in both clinical practice and research in DMT (Koch, Morlinghaus, & Fuchs, 2007). Even though it is important to acknowledge this limitation, the data from male participants in this study did not suggest vastly different experiences compared to those from the female participants. However, researchers have suggested that the way people react to or cope with stressful experience can be different between genders. For example, Taylor and colleagues (2000) described that females may react to stress through utilizing different behavioral pattern than men call "tend and befriend" meaning that they may use more stable alliance and social support in times of stress. Therefore future studies should examine how the therapeutic mechanisms of group DMT intervention might be different between men and women.

Furthermore, the imbalanced composition of the racial and socio-economic demographics of the participants was another limitation. Seventy-five percent of the participants from the phase I grounded theory study were White followed by 19% African American, and 6% Asian. The racial distribution for phase II study was 72% African American, 22% White, and 5% Asian. The majority of the participants from the phase I grounded theory study were white female patients recruited from a private psychiatrist's office in Philadelphia's suburban area. About 70% of the participants in the phase II study were African-American patients recruited from the Stephen and Sandra Sheller 11th street family health services, which is a community health center that serves Philadelphia's low income inner city population. Researchers have reported that racial, ethnic, gender and age variables may affect individuals' pain experience and disability levels differently (Green, Ndao-Brumblay, Nagrant, Baker, & Rothman, 2004); furthermore, a person's resilience is profoundly affected by various intrapersonal and interpersonal factors and socio-cultural

environment (Yeung et al., 2012). Therefore, specific characteristics of these individuals might have been reflected in the theoretical model presented here.

Another potential limitation of the findings related to the sample was that the participants who volunteered to join the study might not be representative of the typical population with chronic pain. DMT is not a widely known therapeutic modality to the general public and DMT programs specifically focusing on chronic pain management are not prevalent. Moreover, most of the participants of the phase II study, except for two, had never experienced DMT before. Therefore, it is possible that those who had enrolled in the study might represent people who are more open and willing to new experiences, and feel comfortable to engage in dance and movement activities with other people. Also since most of the participants were either members of the community health center that offers various forms of educational, and complementary therapy programs, or patients at a pain management clinic, the findings may not be transferrable to those who are not actively involved in these treatment programs or have support. These factors can be conditions that may affect the way people respond to therapeutic aspects of the treatment.

In mixed methods research, inter-legitimation process is emphasized to ensure that the participants of the study agree with the findings (Onwueghbuzie & Johnson, 2004). However, in this study this process was not included because the limited times frame of the study. To complement this limitation, an outer-legitimation process was conducted by seeking input from dissertation committee members and weakness minimization through establishing triangulation and complementarity.

Integrating qualitative and quantitative findings, and integrating the phase I model and phase II model were very challenging processes due to absence of exact guidelines to follow. The integration was based on visual presentations and examination of the categories, relationship between the categories and the findings from the individual personas of the participants. The

process was systematic; constructs, categories, and visual diagrams were compared during discussions with the dissertation committee members. However, the lack of guidance from the research literature in integrating the findings of the three phases of this study made the process extremely challenging.

A final limitation to be addressed is the fact that the model proposed in this study is a preliminary model. Although extensive research went into developing this model, it needs to be further refined through additional research.

CHAPTER 8: CONCLUSION

Although pain is a multifaceted phenomenon, the central experience of pain is first and foremost ignited and results in the person's body. Hence, cognitive, affective, social and spiritual aspects of the pain experience are profoundly connected to a person's embodied perception and meaning. However, in the US, many clinical practices and much of the research for chronic pain rehabilitation often neglect the very corporeality of the experience of pain they treat or study. Therefore, an approach that can provide such embodied, corporeally-textured and sensorimotor-oriented exploration and analysis, such as DMT, is certainly an overdue addition to other biopsychosocial approaches for the study of chronic pain management. Furthermore, despite DMT's unique and promising potential as an effective treatment modality for chronic pain, sufficient clinical practice and research in the field of DMT is lacking. This study sought to address this gap by providing a theoretical model that depicts DMT's unique therapeutic factors and mechanisms based on various data sources through rigorous methodological techniques.

This study focused on psychological resilience which has been recognized as one of the most relevant and important behavioral health concepts remarkably applicable to chronic pain management (Sturgeon & Zautra, 2010; Yeung, Arewasikporn, Zautra, 2010). During the study, individuals explored the issue of self and body in pain, meaning of pain, and resilience in the context of chronic pain through DMT, a treatment intervention that is grounded in the power of embodiment and enaction. The results of this mixed methods grounded theory study shed light on the therapeutic processes and mechanisms of DMT for resilience building in people living with chronic pain. The findings suggested that DMT, as an embodied and enactive therapy, indeed is a promising psychotherapeutic approach that can provide novel therapeutic avenues for resilience building in people living with chronic pain.

The main contributions of this study are three-fold, namely theoretical, clinical and methodological. First, the findngs from this study contribute to the field of DMT by providing a theoretical framework that explains the therapeutic factors and mechanisms of DMT for resilience-building in people with chronic pain. This study identified factors and pathways towards resilience through a corporeal, sensorimotor and creative/expersive mode of psychotherapy process, which can add a unique dimension to the existing resilience models. Secondly, the findings from this study provide useful information and empirical evidence that can strengthen the clinical practice of DMT. The significance of this study's findings lies in the fact that the model is grounded in empirical data. Therefore, the findings can help clinicians to develop treatment goals and design an intervention that can effectively address important issues experienced by people with chronic pain. Lastly, the process and outcome of this study make a meaningful methodological contribution by successfully demonstrating the effectiveness of using a mixed methods grounded theory method with a sequential exploratory-confirmative design in developing a substantive theory. The final results showed that this research method allows a researcher to construct a composite model/theory through iterative steps of developing and testing models using qualitative and quantitative data. This model explicates dynamic mechanisms of a complex phenomenon based on various data sources and analysis techniques.

The findings from this study warrants a) further exploration and research effort to test and refine the model, b) examination of the model from a nomothetic vs. ideographic perspective, and c) development of a treatment manual so that the treatment can be replicated and tested.

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Appendix A: Interview Questions– Phase I

- Please introduce yourself and give me a brief background of you chronic pain condition.
- What impact did chronic pain have in your life?
- What are your most effective coping strategies for chronic pain management?
- What does “being resilient,” mean in chronic pain?
- What might be the factors or resources for resilience in chronic pain management?
- Have you had an experience of participating in dance/movement therapy? If yes, what was your experience?
- What do you think are the most salient therapeutic factors and/or mechanisms of dance/movement therapy in helping people with chronic pain to build resilience?
- What are the most important things to consider in designing a group dance/movement therapy intervention for people with chronic pain?

Appendix B: Consent – Phase I

Drexel University
Consent to Take Part
In a Research Study

1. ***Title of research study:*** Factors and Mechanisms of Psychological Resilience in Chronic Pain Patients

2. Researcher: Joke Bradt, Ph.D., MT-BC (Principal Investigator)
Minjung Shim, MA, R-DMT (Co - investigator)

3. Why you are being invited to take part in a research study

We invite you to take part in a research study because you fulfill the following requirements:

- 18 years old or older
- Diagnosis of chronic pain with duration of at least 2 years
- Proficient in English

You cannot participate in the study if you have any of the following condition;

- Cognitive impairment
- The following current mental health diagnoses that may prevent productive participation in the interview: 1) schizophrenia; 2) other psychotic disorder; 3) organic mental disorder; or 4) current alcohol or substance abuse or dependence;
- Other serious medical illness such as cancer or diabetes
- Pregnancy

4. What you should know about a research study

Someone will explain this research study to you.
Whether or not you take part is up to you.
You can choose not to take part.
You can agree to take part now and later change your mind.
Whatever you decide it will not be held against you.
Feel free to ask all the questions you want before you decide.

5. Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team; Joke Bradt (Principal Investigator) at 215-762-7563 or Minjung Shim (Co-Investigator) at 215-919-0105.
This research has been reviewed and approved by an Institutional Review Board. You may talk to them at (215) 255-7857 or email HRPP@drexel.edu for any of the following:

Your questions, concerns, or complaints are not being answered by the research team.
You cannot reach the research team.
You want to talk to someone besides the research team.
You have questions about your rights as a research subject.
You want to get information or provide input about this research.

6. Why are we doing this research?

The purpose of the research is to learn what it is like to live with chronic pain and what things help you to cope with your pain and carry on with your life despite the negative impact of chronic pain.

<u>Background of this study</u>: Chronic pain can have a profound impact on the quality of life of the person with chronic pain. Based on the belief that chronic pain management should take an integrative approach that may support individual's psychological and social aspects of pain experience as well as physical symptoms, we are trying to develop a psychotherapeutic intervention based on mind-body discipline (i.e. dance/movement therapy). To this end, we would like to find out what things help people with chronic pain in maintaining their function, regaining the balance and/or even growing stronger as a person ("psychological resilience" is a term that refers to this ability) so that we can design an intervention that focuses on fostering those specific qualities. Therefore we would like to ask you what factors that help you to be resilient despite the negative impact of chronic pain experience.

7. How long will the research take?

Your participation in this research study will take maximum 2 hours.

8. How many people will be studied?

We expect to include about 20 people in this research study.

9. What happens if I say yes, I want to be in this research?

If you decide to participate in this research study, the following will be done to you.

- You will participate in an hour-long meeting with the co-investigator Minjung Shim following this consent session. During this meeting you will be asked to fill out a questionnaire and participate in an in-depth interview.
- <u>A demographic survey (10 minutes):</u> You will fill out a brief demographic survey in which we will ask your age, race, ethnicity, diagnosis and treatment information related to your chronic pain
- <u>A resilience questionnaire (3 minutes):</u> We will ask you to fill out a one-page form with 10 questions. These questions will ask you about how you cope with your chronic pain condition.
- <u>Interview (45 minutes):</u> During this interview, we would like to hear about your history of your chronic pain condition, what it is like to live with pain, and what are the things that have helped you to cope with the adverse effect of chronic pain.
- <u>Audio Recordings:</u> The interview will be audio-recorded for research purposes. These recordings will only be listened to by the co-investigator, Minjung Shim. No one else will have access to these audio recordings. These recordings will be erased, cut and destroyed at the end of the research study.
- The co-investigator will give you a call or email to inform you about the findings upon the completion of the interview analysis to check and confirm with you whether the information and our interpretation of your interview are correct.

10. What are my responsibilities if I take part in this research?

If you take part in this research, it is very important that you:

- Follow the researcher's instructions.
- Tell the researcher right away if you have any emotional discomfort or injury.

11. What happens if I do not want to be in this research?

You may decide not to take part in the research and it will not be held against you.

12. What happens if I say yes, but I change my mind later?

You may decide not to take part in the research and it will not be held against you.

13. Is there any way being in this study could be bad for me?

- Physical risks: There are no anticipated physical risks associated with your participation in this study.
- Psychological risks: You may experience feelings, emotions or memories while you talk about you experience of living with chronic pain. Sometimes these reactions might cause you to feel sad or upset. If this happens the investigator who is a registered dance/movement therapist will talk to you and support you until you feel better.
- Social/Economic risks: Three are no anticipated social/economic risks associated with your participation in this study.

14. Do I have to pay for anything while I am on this study?

There is no cost to you for participating in this study.

15. Will being in this study help me any way?

There are no direct anticipated benefits to you or others from your taking part in this research. Although it is possible that you will feel relieved and supported by the opportunity to talk about your pain experience. The result of this study may benefit the field of dance/movement therapy since it will help us have better understanding about what things may help build psychological resilience in chronic pain patients. This will help us develop specific treatment strategies to help people with chronic pain.

16. What happens to the information we collect?

Efforts will be made to limit your personal information, including research study and medical records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

The audio recording of the interview will be erased immediately after it is transcribed into an electronic document. The transcript will be stored in the co-investigator's computer that is password protected. The completed questionnaire and demographic survey form will be stored in a locked cabinet located in the department of creative arts therapies at Drexel University, and only the research staff will have access to them. All collected data will be kept for 3 years after the completion of the study

We may publish the results of this research. However, we will keep your name and other identifying information confidential.

17. Can I be removed from the research without my OK?

The person in charge of the research study can remove you from the research study without your approval. Possible reasons for removal include

- If the investigator feels it is in your best interest to end the study, if for example, participation in this study seem to cause you distress.
- If you fail to adhere to requirements for participation established by the researcher.

We will tell you about any new information that may affect your health, welfare, or choice to stay in the research.

18. What else do I need to know?

This research study is being done by Drexel University. If you become ill or injured during this study, contact Dr. Joke Bradt at 215-762-7563. We will get you medical care. If you need care right away, go to the nearest emergency room or call 9-1-1. Inform all medical emergency staff that you are taking part in this study. We make no promise to provide free medical care or payment for bad outcomes caused by taking part in this research. The costs of medical care because of taking part in this research study will generally be billed to you or your insurance.

If you agree to take part in this research study, we will pay you $15 for your time and effort.

A. Individually Identifiable Health Information That Will Be Collected

The following personal health information about you will be collected and used during the research study and may be given out to others:

Your name, address, and telephone number,;
Personal medical history and diagnosis related to your chronic pain condition;
Information learned during telephone calls, surveys, questionnaires and the interviews done as part of this research study;

B. Who Will See and Use Your Health Information within Drexel University

The researcher and other authorized individuals involved in the research study at Drexel University will see your health information during and may give out your health information during the research study. These include the researcher and the research staff, the institutional review board and their staff, legal counsel, research office and compliance staff, officers of the organization and other people who need to see the information in order to conduct the research study or make sure it is being done properly. Your health information may be disclosed or transmitted electronically.

C. Who Else May See and Use your Health Information

Other persons and organizations outside of Drexel University may see and use your health information during this research study. These include:

Governmental entities that have the right to see or review your health information, such as The Office for Human Research Protections.
A data safety monitoring board.

If your health information is given to someone not required by law to keep it confidential, then that information may no longer be protected, and may be used or given out without your permission.

D. Why your health information will be used and given out

Your health information will be used and given out to carry out the research study and to evaluate the results of the study.

E. If you do not want to give authorization to use your health information

You do not have to give your authorization to use or give out your health information. However, if you do not give authorization, you cannot participate in this research study.

F. How to cancel your authorization

At any time you may cancel your authorization to allow your health information to be used or given out by sending a written notice to Human Research Protection at 1601 Cherry Street, 3 Parkway Bldg., Mail Stop 10-444, Philadelphia, Pennsylvania, 19102. If you leave this research study, no new health information about you will be gathered after you leave. However, information gathered before that date may be used or given out if it is needed for the research study or any follow-up.

G. When your authorization ends

Your authorization to use and give out your health information will end when the research study is finished.

After the research study is finished, your health information will be maintained in a research database. Drexel University shall not re-use or re-disclose the health information in this database for other purposes unless you give written authorization to do so. However, the Drexel University Institutional Review Board may permit other researchers to see and use your health information under adequate privacy safeguards.

H. Your right to inspect your medical and research records

This research study will not involve your medical records. All health information needed for this study will be reported by you on the demographic survey form. The researcher does not have to release research information to you if it is not part of your medical record.

Consent

Your signature documents your permission to take part in this research.

DO NOT SIGN THIS FORM AFTER THIS DATE →

Signature of subject	Date
Printed name of subject	
Signature of person obtaining consent	Date
Printed name of person obtaining consent	Form Date

Appendix C: Consent –Phase II

Drexel University
Consent to Take Part
In a Research Study

1. ***Title of research study:*** Impact of Dance/Movement Therapy on Resilience-building in People Living with Chronic Pain

2. Researchers: Dr. Joke Bradt (Principal Investigator)
Dr. Richard Jermyn (Co-Investigator)
Minjung Shim (Co-Investigator)

3. Why you are being invited to take part in a research study

We invite you to take part in a research study because you fulfill the following requirements:

- You are 18 years old or older
- You have a diagnosis of chronic pain with a duration of at least 6 months
- Your pain medication dosage is currently stable
- You are able to read and speak English
- You are able to engage in moderate dance and movement activities

Because this research focuses on people with chronic pain, we are asking those who have serious psychological problems such as a psychiatric diagnosis (e.g. schizophrenia, borderline personality disorder, antisocial personality disorder, a psychotic disorder), cognitive impairments, or a progressive neurological disorder to not participate. Also if you are pregnant, we ask that you do not participate. Furthermore, we are not including people with current alcohol or substance abuse. People who are receiving compensation for chronic pain related problems or are involved in impending litigation or judgment for disability workers' compensation cannot be included in this study. Finally, because this is a dance/movement therapy study, we are not including people who cannot stand and move around without assistance.

4. What you should know about a research study

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part now and change your mind later.
- If you decide to not be a part of this research no one will hold it against you.
- Feel free to ask all the questions you want before you decide.

5. Who can you talk to about this research study?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team: Joke Bradt (Principal Investigator) at 267-359 5508.
This research has been reviewed and approved by an Institutional Review Board. You may talk to them at (215) 255-7857 or email HRPP@drexel.edu for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

6. Why is this research being done?

The purpose of this study is to find out if Dance/Movement Therapy (DMT) can help you better manage your chronic pain; if it does, we want to find out what aspects of DMT helped you and how it helps you to live with pain.

7. How long will the research last?

We expect that you will be in this research study for 10 weeks. The duration of your participation in this study includes,

- Dance/Movement therapy sessions: 70 minutes each for 10 weeks
- Questionnaires: 15-20 minutes for three times (i.e., today, week 5, and week 10)
- Follow up visit and an interview: 1 hour

8. How many people will be studied?

We expect about 24 people in the entire study. Subjects will be recruited from Stephen and Sandra Scheller 11th Street Family Health Services (11th Street), NeuroMusculoskeletal Institute (NMI) of Rowan University, and the community from the greater Philadelphia area.

9. What happens if I say yes, I want to be in this research?

You understand that the following will be done to you:

- Dance/Movement therapy sessions (80-minutes each for 10 sessions): The DMT will be offered in small groups (5 or 6 people) and will be led by the co-investigator who is a board-certified dance/movement therapist. You will be asked to participate in deep breathing, stretching, and gentle or dynamic movement exercises, expressive dance, role-playing and discussions about emotions or thoughts evoked by the movement experience. You will also be asked to create and perform a story of yourself in relation to your pain through movement (movement narratives) twice during the 10-week treatment period (week 3 and week 10).

In each session you will receive instructions on how to use movement-based techniques in your daily life to help you manage your pain.

- Questionnaires (15-20mintes): We will ask you to fill out several questionnaires during this study. These questionnaires will ask you about your level of capacity to move forward with your life despite the adverse effect of pain, sensitivity to your own body, and fear for movement. It will take you 15-20 minutes to complete these questionnaires. You will fill out these questionnaires three times including today, at week 5, and at week 10.

In addition, in each DMT session, we will ask you to rate your current mood, stress, relaxation, and pain and write briefly about your experience of participating in the DMT session on that particular day. This will take about 3-5 minutes.

- Follow up visit and interview (1 hour): You will be invited to participate in an individual interview with the co-investigator during your follow-up visit. This meeting will last 1 hour. During this meeting, we want to give you the opportunity to tell us:

  - What was your experience of participating in the DMT treatment?
  - What did you learn in the dance/movement therapy?
  - Did the treatment help you manage your chronic pain?
  - What aspects of DMT were helpful?

  In addition, we will ask you to watch the fragments of the video recording of yourself performing your movement narrative with the co-investigator and ask you to tell her:

  - What are your thoughts, and feelings as you watch yourself performing the movement narratives?
  - Are there any new insights or understanding you have gained from watching these videos?
  - What thoughts come to your mind when you compare the first and the second movement narratives?

- Video Recording – All the dance/movement therapy sessions will be video-recorded for research purposes. These recordings will be viewed by the investigators during the study for research purposes. Because the video recordings of the dance/movement therapy sessions may be helpful to answer other research questions in the future (for example, how dance/movement therapy experiences affect participants' way of moving), we would like to ask your permission to store the videotapes of the dance/movement therapy sessions on a Drexel University's secure data server for future research use. Only the principal investigators, Dr. Joke Bradt and co-investigator Minjung Shim will have access to them. You do not need to give your permission for this.

  - Are we allowed to use the video-recordings for future research purposes?

    □ Yes □ No

  - If no, can we continue to use video-recordings for future research if we blur your face so that your identity is not revealed?

    □ Yes □ No

  - If yes, may we use the video-recordings for up to 10 years?

    □ Yes □ No

10. What are my responsibilities if I take part in this research?

If you take part in this research, it is very important that you:

- Follow the researcher's instructions.
- Tell the researcher right away if you have a complication or injury.
- Agree not to seek additional therapies for the duration of this study beyond those already included in your current treatment regimen. However, if additional treatments are necessary for your well-being, you will be free to withdraw from this study to receive such treatments.

11. What happens if I do not want to be in this research?

You may decide not to take part in the research and it will not be held against you.

Instead of being in this research study, other treatments are available to you at the treatment facility you are currently attending (11th Street or NMI). You are encouraged to discuss treatment options with your

primary care provider. You do not have to participate in this study to be treated for your chronic pain. If you decide not to participate you will continue to have access to all of the services at your current treatment facility with no consequences to you.
You may decide not to take part in the research and it will not be held against you.

12. What happens if I say yes, but I change my mind later?

You agree to take part in the research now and stop at any time it will not be held against you.
If you stop being in the research, already collected data may not be removed from the study database.

13. Is there any way being in this study could be bad for me?

The following are risks associated with participating in this study:

- Physical risks: Although there are no anticipated physical risks associated with your participation in this study, there is a possibility that management of your chronic pain may get better or may become worse while you are in this study.
- Psychological risks: You may experience feelings, emotions or memories while engaging in the DMT process, discussing your reactions to the activities, or hear other group members' reactions. Sometimes these reactions might cause you to feel sad or nervous. If this happens the therapist will talk to you and support you until you feel better.
- Social/Economic risks: There are no anticipated social/economic risks associated with your participation in this study.

14. Do I have to pay for anything while I am on this study?

There is no cost to you for participating in this study.

15. Will being in this study help me in any way?

We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits include that you may learn to better manage your chronic pain. You may learn new ways of dealing with your pain and stress, feel more positive about yourself, and feel supported by other group members and the therapist.

The results of this study may also benefit the field of dance/movement therapy since there is little research available at this time about the impact of dance/movement therapy intervention on people with chronic pain. If the results of this study and other studies like this one are positive, this type of treatment may become available for other patients with chronic pain in the future.

16. What happens to the information we collect?

Efforts will be made to limit your personal information, including research study and medical records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRBs of Drexel University and Rowan University and other representatives of this organization.

The monitors, auditors, and the IRBs will be granted direct access to your medical records for verification of the research procedures and date. By signing this document you are authorizing this access.

We may publish the results of this research. However, we will keep your name and other identifying information confidential.

17. Can I be removed from the research without my OK?

The person in charge of the research study can remove you from the research study without your approval. Possible reasons for removal include:

- If the principal investigator feels that ending your participation in this study is in your best interest (for example, dancing in the presence of others causes you great discomfort and distress).
- If all or part of the study is discontinued for any reason by the investigator, or university authorities.
- If you fail to adhere to requirements for participation established by the researcher.

We will tell you about any new information that may affect your welfare or choice to stay in the research.

18. What else do I need to know?

This research study is being done by Drexel University and Rowan University, and partially funded by the Marian Chace Foundation.

If you agree to take part in this research study, we will pay you $ 120.00 for your time and effort if you complete all scheduled study visits.

- $10 for baseline visit
- $10 for each DMT session ($10 x 10)
- $10 for follow up visit

Federal law provides additional protections of your personal information that are described here.

Individually Identifiable Health Information That Will Be Collected

The following personal health information about you will be collected and used during the research study and may be given out to others:

- Your name, telephone number, date of birth;
- Personal medical history related to your chronic pain;
- Information learned through questionnaires as part of this research study;

Who Will See and Use Your Health Information within Drexel University

The researcher and other authorized individuals involved in the research study at Drexel University and Rowan University will see your health information during and may give out your health information during the research study. These include the researcher and the research staff, the institutional review boards and their staff, legal counsel, research office and compliance staff, officers of the organizations and other people who need to see the information in order to conduct the research study or make sure it is being done properly. Your health information may be disclosed or transmitted electronically.

Who Else May See and Use your Health Information

Other persons and organizations outside of Drexel University and Rowan University may see and use your health information during this research study. These include:

- Governmental entities that have the right to see or review your health information, such as The Office for Human Research Protections

If your health information is given to someone not required by law to keep it confidential, then that information may no longer be protected, and may be used or given out without your permission.

Why your health information will be used and given out

Your information may also be used to meet the reporting requirements of governmental agencies.

If you do not want to give authorization to use your health information

You do not have to give your authorization to use or give out your health information. However, if you do not give authorization, you cannot participate in this research study.

How to cancel your authorization

At any time you may cancel your authorization to allow your health information to be used or given out by sending a written notice to Human Research Protection at 1601 Cherry Street, 3 Parkway Bldg., Mail Stop 10-444, Philadelphia, Pennsylvania, 19102. If you leave this research study, no new health information about you will be gathered after you leave. However, information gathered before that date may be used or given out if it is needed for the research study or any follow-up.

When your authorization ends

Your authorization to use and give out your health information will end when the research study is finished.

Your right to inspect your medical and research records

You have the right to look at your medical records at any time during this research study. However, the researcher does not have to release research information to you if it is not part of your medical record.

Signature Block for Capable Adult

Your signature documents your permission to take part in this research.

DO NOT SIGN THIS FORM AFTER THIS DATE →

Signature of subject	Date
Printed name of subject	
Signature of person obtaining consent	Date
Printed name of person obtaining consent	Form Date

Appendix D: "I am" Poem

The Poem –"I am"

I am _____. (your name)

This is my pain. (a pose or movement that represents your pain)

When I am in pain, I feel _____.
(your emotional response to pain)

I fear _____.
(something you are afraid of)

In the midst of my pain I can find joy in _____.
(something that gives you joy)

Because of living with pain I have lost _____.
(any loss you have experienced)

But because of the experience of living with pain I learned

_____.
(what you have gained/learned from your effort to cope with pain)

I accept my pain, my body and myself. My body is home.
(a pose or gesture that could go with this affirmation)

I say, _____.
(something you believe in)

I hope _____.
(something you actually hope for)

I am _____. (the first line of the poem repeated)

Appendix E: Interview Protocol -Phase II

Introduction:

We are here together to meet for about an hour with a specific objective, which is to gather the description of your experience of participating in the 10-week dance/movement therapy treatment designed for people living with chronic pain. Our research project as a whole focuses on identifying what aspects of a 10-week group dance/movement therapy program help someone living with pain to become more resilient, and how this process happens. I am going to ask some questions to learn about your experience and understanding on DMT's therapeutic factors and mechanisms.

Sometimes it can be challenging to remember what you have experienced and try to describe them in words, and it takes mental energy and focus. To make this process easier, I'd like to encourage you to first relax your mind and body, and clear your thought so that you can bring your focus to this process. Please take your time to prepare yourself mentally and physically to have a more relaxed mode of accessing your memories and thoughts.

Questions

- Can you describe what your experience was to participate in the 10-week group DMT treatment?
- What aspect or factor of the DMT treatment was most important or effective/helpful to you?
    - Why was it important/effective/helpful for you?
- Did this experience affect you in anyway?
    - How did it affect you?/What did it do to you?
    - What do you think has made you to experience that?
- Was there anything you did not like about the treatment or wish it was different?
    - How would you like it to be different?
    - Do you have any recommendation to change that?

Appendix F: Quantitative Measurements

The Pain Responses to Stressful Experience Scale

Instructions: The following statements describe how some individuals may think, feel, or act during and after stressful events in life. Please indicate how well each of these statements describes your response to the stress of your pain experience.

In response to the stress of my pain, I tend to …

	Exactly like me				Not at all like me
1. …take action to fix things.	4	3	2	1	0
2. ...not give up trying to solve problems I think I can solve.	4	3	2	1	0
3. ...find a way to do what's necessary to carry on.	4	3	2	1	0
4. ...pray or meditate.	4	3	2	1	0
5. ...face my fears.	4	3	2	1	0
6. ...find opportunity for growth.	4	3	2	1	0
7. ...calm and comfort myself.	4	3	2	1	0
8. ...try to "recharge" myself before I have to face the next challenge.	4	3	2	1	0
9. ...see it as a challenge that will make me better.	4	3	2	1	0
10. ...look at the problem in a number of ways.	4	3	2	1	0
11. ...look for creative solutions to the problem.	4	3	2	1	0
12. ...put things in perspective and realize I will have times of joy and times of sadness.	4	3	2	1	0
13. ...be good at determining which situations are changeable and which are not.	4	3	2	1	0
14. ...find meaning from the experience.	4	3	2	1	0
15. ...find strength in the meaning, purpose, or mission of my life.	4	3	2	1	0
16. ...know I will bounce back.	4	3	2	1	0
17. ...expect that I can handle it.	4	3	2	1	0
18. ...learn important and useful life lessons.	4	3	2	1	0
19. ...understand that bad things can happen to anyone, not just me.	4	3	2	1	0
20. ...lean on my faith in God or a higher power.	4	3	2	1	0
21. ...draw upon lessons learned from failures and past mistakes.	4	3	2	1	0
22. ...practice ways to handle it better next time.	4	3	2	1	0

Reference: Johnson, D. C. Polusny, M. A., Erbes, C. R., King, D., King, L., Litz, B. T., Schnurr, P. P., Friedman, M., Pietrzak, R. H., & Southwick, S. M., (2011). Development and initial validation of the Response to Stressful Experiences Scale. *Mil Med.* 176(2), 161–169.

COPE Inventory

These items deal with ways you've been coping with the stress in your life. Each item says something about a particular way of coping. Make your answers as true FOR YOU as you can.

1. I've been accepting the reality of the fact that it (living with pain) has happened.

___ 1 = I haven't been doing this at all
___ 2 = I've been doing this a little bit
___ 3 = I've been doing this a medium amount
___ 4 = I've been doing this a lot

2. I've been learning to live with it (pain).

___ 1 = I haven't been doing this at all
___ 2 = I've been doing this a little bit
___ 3 = I've been doing this a medium amount
___ 4 = I've been doing this a lot

3. I try to see it in a different light, to make it seem more positive.

___ 1 = I haven't been doing this at all
___ 2 = I've been doing this a little bit
___ 3 = I've been doing this a medium amount
___ 4 = I've been doing this a lot

4. I look for something good in what is happening.

___ 1 = I haven't been doing this at all
___ 2 = I've been doing this a little bit
___ 3 = I've been doing this a medium amount
___ 4 = I've been doing this a lot

5. I try to grow as a person as a result of the experience (of living with pain).

___ 1 = I haven't been doing this at all
___ 2 = I've been doing this a little bit
___ 3 = I've been doing this a medium amount
___ 4 = I've been doing this a lot

6. I learn something from the experience (of living with pain).

___ 1 = I haven't been doing this at all
___ 2 = I've been doing this a little bit
___ 3 = I've been doing this a medium amount
___ 4 = I've been doing this a lot

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. Journal of Personality and Social Psychology, 56, 267-283.

Multidimensional Assessment of Interoceptive Awareness

Please indicate how often each statement applies to you generally in daily life.

	Never					Always
1. When I am tense I notice where the tension is located in my body.	0	1	2	3	4	5
2. I notice when I am uncomfortable in my body.	0	1	2	3	4	5
3. I notice where in my body I am comfortable.	0	1	2	3	4	5
4. I notice changes in my breathing, such as whether it slows down or speeds up.	0	1	2	3	4	5
5. I do not notice (I ignore) physical tension or discomfort until they become more severe.	0	1	2	3	4	5
6. I distract myself from sensations of discomfort.	0	1	2	3	4	5
7. When I feel pain or discomfort, I try to power through it.	0	1	2	3	4	5
8. When I feel physical pain, I become upset.	0	1	2	3	4	5
9. I start to worry that something is wrong if I feel any discomfort.	0	1	2	3	4	5
10. I can notice an unpleasant body sensation without worrying about it.	0	1	2	3	4	5
11. I can pay attention to my breath without being distracted by things happening around me.	0	1	2	3	4	5
12. I can maintain awareness of my inner bodily sensations even when there is a lot going on around me.	0	1	2	3	4	5
13. When I am in conversation with someone, I can pay attention to my posture.	0	1	2	3	4	5
14. I can return awareness to my body if I am distracted.	0	1	2	3	4	5
15. I can refocus my attention from thinking to sensing my body.	0	1	2	3	4	5
16. I can maintain awareness of my whole body even when a part of me is in pain or discomfort.	0	1	2	3	4	5

17. I am able to consciously focus on my body as a whole.	0	1	2	3	4	5
18. I notice how my body changes when I am angry.	0	1	2	3	4	5
19. When something is wrong in my life I can feel it in my body.	0	1	2	3	4	5
20. I notice that my body feels different after a peaceful experience.	0	1	2	3	4	5
21. I notice that my breathing becomes free and easy when I feel comfortable.	0	1	2	3	4	5
22. I notice how my body changes when I feel happy / joyful.	0	1	2	3	4	5
23. When I feel overwhelmed I can find a calm place inside.	0	1	2	3	4	5
24. When I bring awareness to my body I feel a sense of calm.	0	1	2	3	4	5
25. I can use my breath to reduce tension.	0	1	2	3	4	5
26. When I am caught up in thoughts, I can calm my mind by focusing on my body/breathing.	0	1	2	3	4	5
27. I listen for information from my body about my emotional state.	0	1	2	3	4	5
28. When I am upset, I take time to explore how my body feels.	0	1	2	3	4	5
29. I listen to my body to inform me about what to do.	0	1	2	3	4	5
30. I am at home in my body.	0	1	2	3	4	5
31. I feel my body is a safe place.	0	1	2	3	4	5
32. I trust my body sensations.	0	1	2	3	4	5

Reference: Mehling, W.E. , Price, C., Daubenmier, J. J., Acree, M., Bartmess, E., & Stewart, A., (2012) The Multidimensional Assessment of Interoceptive Awareness (MAIA). *PLoS ONE* 7(11): e48230. doi:10.1371/journal.pone.0048230

Tampa Scale-11 (TSK-11)

This is a list of phrases that other people have used to express how they view their condition. Please circle the number that best describes how you feel about each statement.

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. I am afraid I might injure myself if I exercise.	1	2	3	4
2. If I were to try to overcome it, my pain would increase.	1	2	3	4
3. My body is telling me I have something dangerously wrong.	1	2	3	4
4. People aren't taking my medical condition serious enough.	1	2	3	4
5. My accident/problem has put my body at risk for the rest of my life	1	2	3	4
6. Pain always means I have injured my body.	1	2	3	4
7. Simply being careful that I do not make any unnecessary movement is the safest thing I can do to prevent my pain from worsening.	1	2	3	4
8. I wouldn't have this much pain if there wasn't something potentially dangerous going on in my body.	1	2	3	4
9. Pain lets me know when to stop exercising so that I don't injure myself.	1	2	3	4
10. I can't do all the things normal people do because it's too easy for me to get injured.	1	2	3	4
11. No one should have to exercise when s/he is in pain.	1	2	3	4

Reference: Woby, S. R., Roach, N. K., Urmston, M., & Watson, P. J., (2005). Psychometric properties of the TSK-11: a shortened version of the Tampa Scale for Kinesiophobia. *Pain.* 117(1-2), 137–144.

PATIENT'S GLOBAL IMPRESSION OF CHANGE SCALE (PGIC)

Since beginning participation in the dance/movement therapy program, how would you describe the change (if any) in activity limitations, symptoms, emotions, and overall quality of life, related to your painful condition? Please circle the number below that matches your degree of change since you started the dance/movement therapy program.

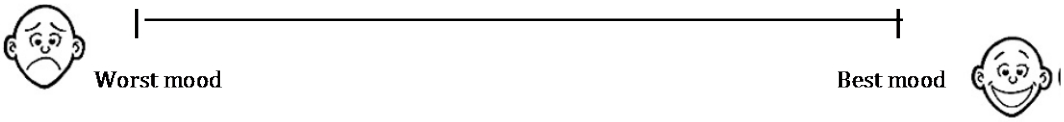
No change	Almost the same	A little better	Somewhat better	Moderately better	Better	A great deal better
1	2	3	4	5	6	7

Explanation:

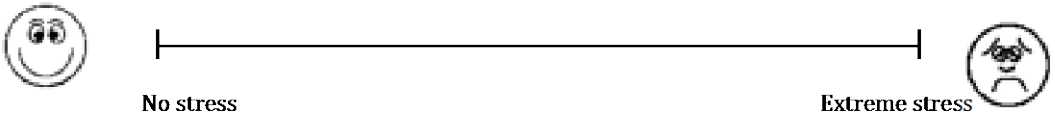
1 = No change (or condition has got worse)	5 = Moderately better, and a slight but noticeable change
2 = Almost the same, hardly any change at all	6 = Better, and a definite improvement that has made a real and worthwhile difference
3 = A little better, but no noticeable change	7 = a great deal better, and a considerable improvement that has made all the difference
4 = Somewhat better, but the change has not made any real difference	

Pre-session test

1. My current mood level is: Mark with a line "| ", below to show how you are feeling right now.



2. My current stress level is: Mark with a line "| ", below to show how you are feeling right now.



3. How relaxed do you feel at the moment? Mark with a line "| ", below.

4. How would you rate your pain at the moment?

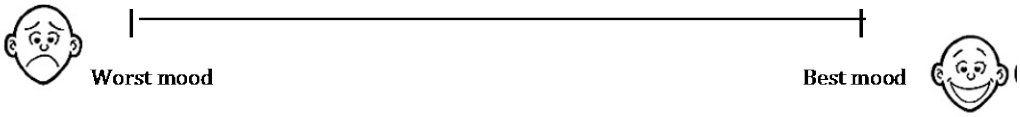
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

1 2 3 4 5 6 7 8 9 10

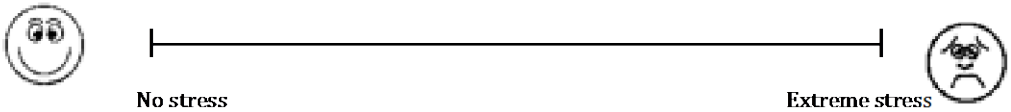
No pain — Moderate pain — Worst imaginable pain

Post-session test

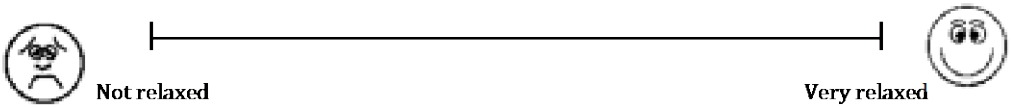
1. My current mood level is: Mark with a line "| ", below to show how you are feeling right now.



2. My current stress level is: Mark with a line "| ", below to show how you are feeling right now.



3. How relaxed do you feel at the moment? Mark with a line "| ", below.



4. How would you rate your pain at the moment?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

1 2 3 4 5 6 7 8 9 10

No pain — Moderate pain — Worst imaginable pain

5. Was today's session helpful to you? (please circle) Yes or No If yes, what activity/aspect was helpful and why was it helpful to you?

What activity or aspect?	Why was it helpful?

VITA

1. Education and Training. Minjung Shim was born and raised in Seoul, Korea where she received professional training in ballet and obtained BA and MA degrees in dance at Ewha Womans University. She took her formal training in dance/movement therapy and earned her MA and Ph.D. in Creative Arts Therapies at Drexel University. She is a board certified dance/movement therapist.

2. Clinical Experience: Ms. Shim has worked with diverse population with various ages and clinical concerns. Her experiences include applying DMT in children and adults with developmental disorder, adults with mental illness, and adults with medical issues such as cancer and chronic pain.

3. Teaching Experience: Ms. Shim has taught ballet, applied anatomy and kinesiology, and DMT courses for both professional trainees as well as the general public. She has given numerous presentations and workshops on several topics related to DMT at national and international academic events.

4. Research experience: Besides her experience as a student researcher for her dissertation research, Ms. Shim had an opportunity to develop hands-on knowledge and experience in different types of research as a research assistant and study coordinator under her advisor Dr. Joke Bradt. She participated in two Cochrane systematic reviews, two randomized controlled clinical trials and an observation-based secondary analysis during her PhD process.

5. Publications

- Bradt, J. Gerrity, P., Norris, M., **Shim, M**., Gracely, E. (under review). Vocal music therapy for chronic pain management: A mixed methods pilot study. Journal of Music Therapy.
- Bradt, J., **Shim, M.**, Goodill, S.W. (2015). Dance/movement therapy for improving psychological and physical outcomes in cancer patients. Cochrane Database of Systematic Reviews, 2015 (1). doi: 10.1002/14651858.CD007103.pub3.
- Bradt, J., Potvin, N., Kesslick, A., **Shim, M**., Radl, D., Shriver, E., Gracely, E. J., & Komarnicky-Kocher, L. (2014). The impact of music therapy versus listening to prerecorded music on psychological outcomes in cancer patients: a mixed methods study. *Supportive Care in Cancer.* 23(5), 1261-71
- Bradt, J., Dileo, C., & **Shim, M**. (2013). Music interventions for preoperative anxiety. Cochrane Database of Systematic Reviews, (6). doi:10.1002/14651858.CD006908.pub2
- Gerber, N., Templeton, E., Chilton, G., Liebman, M. C., Manders, E., & **Shim, M**. (2012). Art-based research as a pedagogical approach to studying intersubjectivity in the creative arts therapies. *Journal of Applied Arts and Health*, 3(1), 39-48